Long-Term Surveillance and Maintenance Plan for the U.S. Department of Energy Miamisburg Closure Project, Mound Site, Miamisburg, Ohio

Volume I: (LTS&M Plan and referenced LM Plans and information)

September 2005

Information in this document is subject to revision until the EM mission is completed at the Miamisburg Closure Project at the Mound Site

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Acronyms

ACHP	Advisory Council on Historic Preservation
AR	Administrative Record
ARAR	applicable or relevant and appropriate requirements
ASER	Annual Site Environmental Report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	*Code of Federal Regulations*
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FONSI	Finding of No Significant Impact
ft	feet (foot)
HABS	Historic American Building Survey
IC	Institutional Control
LM	Legacy Management
LTS	Long-Term Stewardship
LTS&M	Long-Term Surveillance and Maintenance
m	meter
MCL	maximum contaminant level
MMCIC	Miamisburg Mound Community Improvement Corporation
MOA	Memorandum of Agreement
MRC	Monsanto Research Corporation
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPL	National Priorities List
ODH	Ohio Department of Health
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
O&M	Operation and Maintenance
OU	Operable Unit
PRS	Potential Release Site
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RRE	Residual Risk Evaluation
TCE	trichloroethene
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound

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1.0 Purpose and Objective

1.1 Purpose

This Long-Term Surveillance and Maintenance (LTS&M) Plan explains how the U.S. Department of Energy (DOE) will fulfill its surveillance and maintenance obligation at the DOE Miamisburg Closure Project at the Mound site located in Miamisburg, Ohio. DOE will retain liability for any newly discovered contamination remaining at the Mound Site after the DOE Office of Environmental Management (EM) has completed its cleanup mission. In addition, the DOE will be responsible for the operation and maintenance of all the remedies (engineered or institutional) that are chosen to control any of the identified residual contamination. The DOE Office of Legacy Management (OLM) will be responsible for assuring that human health and the environment remain protected at the Mound Site and that the selected remedies remain functional and effective.

This Plan addresses all activities necessary to ensure protection of human health and the environment following completion of cleanup of soil and buildings and implementation of remedies at the Mound site. Such activities include:

- Maintaining all engineered and institutional controls (ICs) designed to contain, or to prevent exposures to, residual contamination and waste,
- Monitoring required as part of the remedy or deemed necessary to ensure continued protection of the public and environment,
- Inspecting all engineered and ICs to assure adequate performance to meet established design goals,
- Maintaining all physical systems, structures or facilities required to implement the remedy, and
- Maintaining all institutional systems required to implement the remedy.

This LTS&M Plan is required at the Mound Site because the remedies selected under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) resulted in remediating the site to an industrial use standard that allow some residual contamination to remain onsite. This land use must be maintained as part of the remedy. The controls put in place as part of the remedy must be maintained.

The LTS&M Plan has been developed as a two-volume set. Volume 1 is the implementing document for the operations and maintenance (O&M) plans for the CERCLA remedies and long term operation of the site. It describes the activities, roles and responsibilities, and the process for changing this plan or the activities it specifies. The defined activities required to maintain the remedies and controls are specified in the O&M Plans. Volume 2 contains the individual O&M plans that have been developed by DOE-EM and approved by the regulators and stakeholders. The activities outlined in the O&M Plans are part of the remedy for the site and are legally enforceable under CERCLA. These O&M Plans are referenced in the activities described in Volume 1.

1.2 Effective Date of LTS&M Plan

Activities outlined in this Plan are the responsibility of OLM and will begin when the following EM activities are accomplished:

1. All required short-term response activities (e.g., soil excavation, cap construction, building decommissioning) have been completed.
2. All required long-term response actions (e.g., groundwater treatment systems) are constructed and determined to be operational and functional.
3. All necessary documentation is in place (e.g., engineering certifications/verifications, final site conditions/configuration records, records storage locations identified with correct disposition schedules in place, and information management systems are in place).
4. The site is administratively transferred to another federal (including DOE), state, or private entity.

When these activities are completed, OLM will take over responsibility for ensuring that remedies implemented at the Mound Site remain protective of human health and the environment. The activities will likely be completed by EM over a period of time; therefore, as decisions regarding these activities become final, this document will be revised.

The keys to successful transition are a thorough compilation of the environmental conditions and associated management responsibilities of the property/facility being transferred and early communication and planning between EM and OLM. The EM organization is responsible for providing the complete information necessary to ensure successful transition to OLM.

1.3 Objectives

The primary objective of this LTS&M Plan is to document the activities and operations that are required to maintain the selected CERCLA remedial actions and ensure the effectiveness of those remedies. This Plan summarizes all surveillance and maintenance operations and incorporates by reference other necessary O&M plans. Another major objective of this Plan is to identify the actions that the public and regulatory community can expect. Specific surveillance and maintenance objectives for performing LTS&M at the Mound Site are summarized in Table 1–1 and are further explained in Section 3.

1.4 Scope

The property within the Mound Site boundary will be restricted to industrial/commercial use. Risk-based soil clean up levels were developed using the industrial land use scenario. This land use is one of the ICs that comprise the CERCLA remedy. The surveillance and maintenance activities associated with maintaining this remedy are outlined in *Operation and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plant Property* (DOE 2003a). The presence of residual contamination dictates that long term surveillance and maintenance activities will be required for all property within the Mound site boundary. This LTS&M Plan covers the entire "1998 Mound Plant Property," which refers to the approximately 306 acres originally owned by DOE (see Figure 2–5). The term "Mound Site" used in this plan is synonymous with the term "1998 Mound Plant Property" used in other documents.

Table 1–1. Summary of Surveillance and Maintenance Objectives for the Miamisburg Closure Site, Miamisburg, Ohio

Surveillance and Maintenance Objective	Strategies to Achieve Objective (see Section 3 for specifics)
Control human and environmental exposure to any remaining residual materials contained in soil or water at the Miamisburg Closure Project at the Mound Site	• Conduct regular inspections to determine if restrictions are being followed • Evaluate the results of the monitoring systems • Evaluate observations made by other surveillance and maintenance program workers at the site • Monitor ICs and point of compliance locations to evaluate effectiveness • Maintain non-residential land use through ICs • Maintain cover of former landfill area in OU-1 • Monitor systems for notification of site concerns by other monitoring agencies, regulators, stakeholders, and the general public • Plan emergency response mechanisms for newly discovered residual contamination.
Control human exposure to contaminated groundwater	• Maintain ICs, including restrictions on groundwater usage and well installation • Monitor groundwater quality • Plan emergency response mechanisms for changes in groundwater conditions to ensure protectiveness of human health.
Limit or prevent induced migration of contaminated groundwater	• Operate Pump and Treatment System for OU-1 • Conduct regular inspections of extraction system to determine if it is operating to design specifications. • Monitor hydraulic properties and groundwater quality in the OU-1 area. • Monitor for natural attenuation of contaminants under groundwater remedy
Control human exposure to contaminated seeps	• Maintain non-residential land use through ICs • Monitor water quality
Control human and environmental exposure to residual contaminants of soil in the Erie- Miamisburg Canal	• Monitor water quality
Prevent loss of knowledge	• Comply with National Archives and Records Administration records management requirements • Record site information in real property records • Maintain information repository • Maintain the Administrative Record • Provide annual reports and environmental data on the Internet • Interact with regulators and stakeholders regularly

The Miami-Erie Canal is an off-property area that the DOE never owned; however, the canal is part of the site as listed on the National Priorities List (NPL). Contaminants have been detected in the groundwater under the canal and Community Park. The need for any action to address these contaminants in groundwater has yet to be identified. Any action necessary to address groundwater in these areas, as well as, the completion of other off-property evaluations (i.e., site-wide residual risk evaluation) will be performed by EM and may indicate a need for long term surveillance and maintenance.

The Phase I Parcel of the Mound Site has not been transferred to the Miamisburg Mound Community Improvement Corporation (MMCIC). The remedies selected for this parcel are ICs and monitored natural attenuation for groundwater contamination in this parcel. DOE will

continue to monitor groundwater in Phase I for trichloroethene (TCE) and its degradation products to verify that the concentration of TCE is decreasing due to natural attenuation and is not impacting the Buried Valley Aquifer. The specifics of the monitoring are defined in the *Phase I Groundwater Monitoring Plan* (DOE 2003c) that has been approved by the U.S. Environmental Protection Agency (USEPA) and the Ohio Environmental Protection Agency (OEPA).

Operable Unit 1 (OU-1) is an area of groundwater contamination located on the western-most boundary of the Mound Site. This parcel has not been transferred to MMCIC. The selected remedy for OU-1 is the collection and treatment of contaminated groundwater and disposal of the treated water. This action was designed to control groundwater contamination, to prevent migration of contamination toward the DOE-owned drinking water production wells, and to minimize exposure to potential receptors. The OU-1 Record of Decision (ROD) requires the DOE to monitor the chemical property and hydraulic behavior of the groundwater system to verify the adequacy of the remedy. The operational requirements for this system are given in the *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2000b). An Explanation of Significant Difference (ESD) to the Record of Decision is being developed to include the operation of a soil vapor extraction (SVE) system to address VOC contamination in both soil and groundwater in the OU-1 area.

1.5 Summary of DOE Environmental Management Functions

In November 1989, USEPA placed the Mound site on the NPL because of chemical contamination present in the site groundwater and the site's proximity to the Buried Valley Aquifer, a designated sole source aquifer. DOE, USEPA, and OEPA developed a procedural framework for the assessment and remediation of the site under CERCLA that were documented in the Federal Facility Agreements (FFA) of 1990 and 1993 (USEPA 1990 and USEPA 1993).

In 1995, DOE and its regulators developed an approach to making decisions about the environmental restoration of the Mound site and its facilities. This approach is known as the Mound 2000 process, which meets the requirements of CERCLA Section 120(h)-*Property Transfer of Federal Agencies*. DOE and its regulators used the MOUND 2000 process to address the environmental issues associated with the restoration of the site, EM's completion of work at the site, and deletion of the site from the NPL. Figure 1–1 shows the MOUND 2000 flowchart versus the CERCLA process as typically depicted in the guidance.

The MOUND 2000 process addresses buildings and potential release sites (PRSs) individually. A PRS is an area where knowledge of historical or current use indicates that the site may have had releases of radioactive and/or hazardous materials. A core team comprised of USEPA – Region 5, OEPA, and DOE representatives reviewed the status of each building and PRS based upon an information package that serves as the basis for decision-making. The core team reaches a consensus decision to categorize each PRS or building in one of the following ways: (1) no further action, (2) a response action is warranted, or (3) further assessment is needed because there is insufficient information to make a determination. The MOUND 2000 methodology is given in the *Work Plan for Environmental Restoration of the DOE Mound Site, the MOUND 2000 Approach* (DOE 1999d).

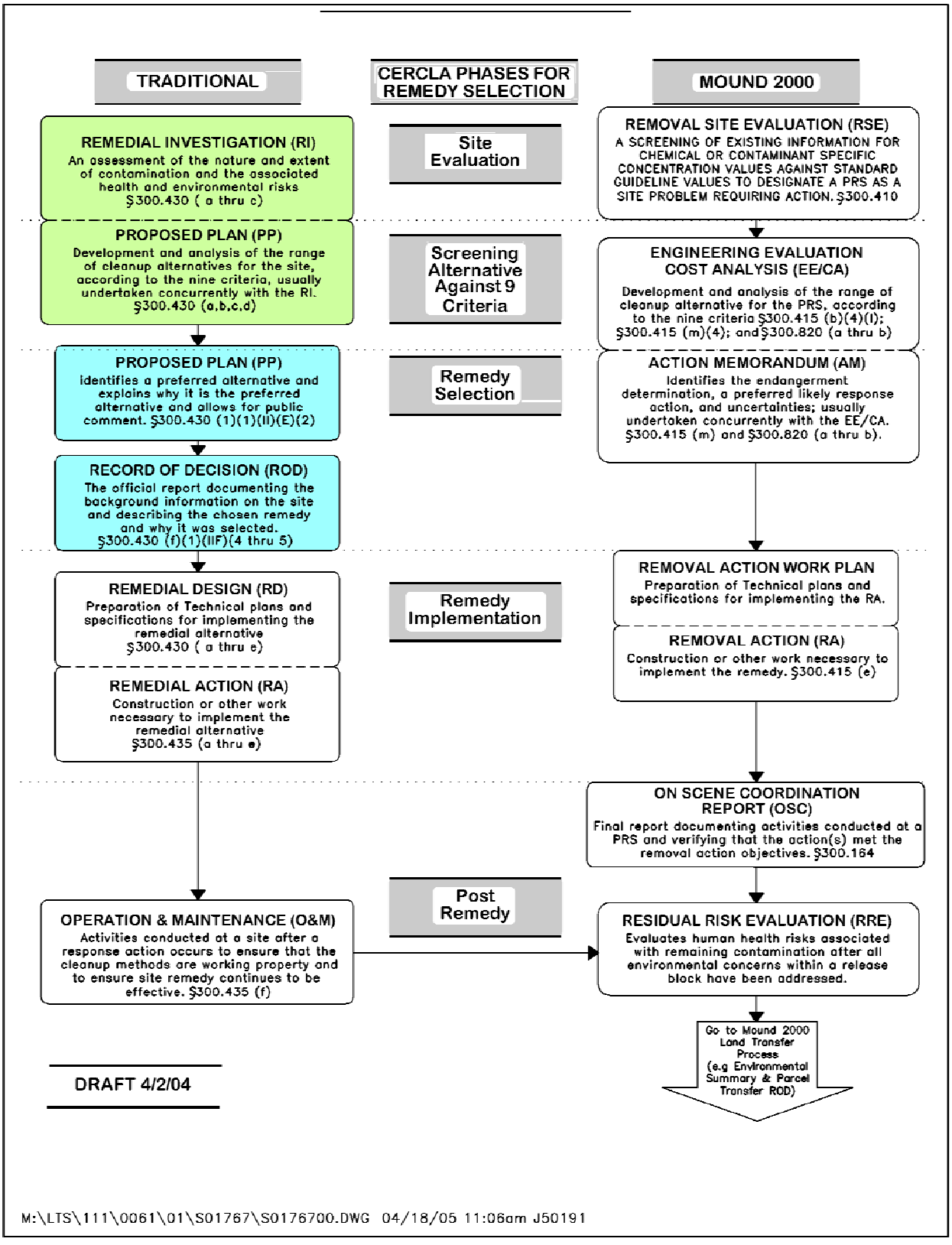

Figure 1–1. Mound 2000 Flow chart versus Traditional CERCLA Process

All buildings were either decontaminated to meet free release criteria or demolished with only 20 of the original 116 buildings remaining. The soil under the footprint of demolished buildings was remediated, as necessary, to meet the 10^{-4} to 10^{-6} risk range consistent with the soil remediation program (DOE, 1997). Once remedial activities were complete, verification sampling was performed, each PRS was back-filled, and the land surface graded in a manner consistent with the site sales contract.

After completing all necessary removal actions for a specific area or parcel, a Residual Risk Evaluation was performed prior to issuance of a ROD for that parcel. The RODs allow the parcel to be delisted from the NPL and will specify the necessary institutional/engineering controls to minimize exposure to residually contaminated media to acceptable levels. Following completion of the parcel ROD, an Environmental Summary was prepared to support a transfer of deed to new ownership for economic development by documenting that the DOE−Miamisburg Closure Project at the Mound Site has met the requirements of CERCLA §120(h) for the parcel. Each environmental summary provides a brief description of the historical uses, PRS and building data package summary of environmental findings and actions taken, a summary of residual risk, and explanation of other factors considered (e.g., cultural resources, floodplains, etc). The process is the same as that used for 104(e) responses, but different from standard remedial investigation/feasibility study process, which was designed to determine if there is a problem prior to action.

1.6 Summary of LTS&M Regulatory Management

This section provides a summary of the regulatory and institutional framework for OLM at the Mound Site (Figure 1–2). Included are all OLM activities that are specifically required by federal, state, or local regulations, FFAs, RODs, or other third-party enforceable agreements, as well as other non-enforceable activities DOE will perform.

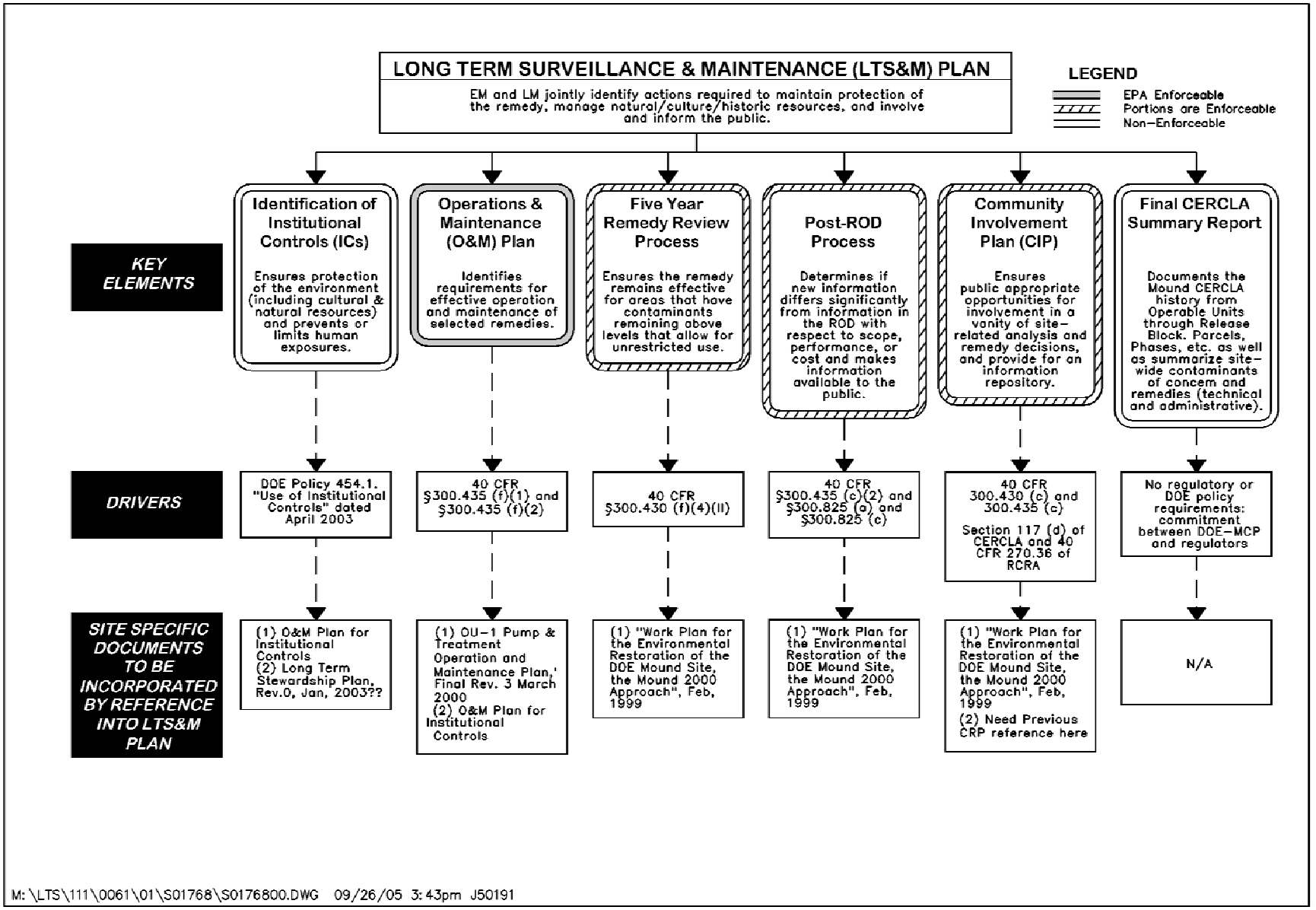

Figure 1–2. Enforceable and Non-Enforceable Requirements for the LTS&M Plan

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2.0 Background Information on the Mound Site

2.1 Site Description

The following is a summary level discussion of the Mound Site and the surrounding areas. The pre-cleanup site conditions can be found in the *Operable Unit 9 (OU-9) Site Scoping Report*, Volumes 1 through 12 (DOE 1994b). The Information Repository contains documentation on the site conditions through time. A complete listing of all information contained in the information repository is provided in Appendix A.

2.1.1 Location

The Mound site is located in Miamisburg, Ohio, approximately 10 miles southwest of Dayton (Figure 2–1). The site was comprised of 17 buildings on 306 acres of land. The Great Miami River flows from northeast to southwest through Miamisburg and dominates the geography of the region surrounding the Mound site.

2.1.2 Land Use

The river valley is highly industrialized, while the rest of the region is a mix of farmland, residential area, small communities, and light industry. Many city and township residences, five schools, the Miamisburg downtown area, and six city parks are located within 1 mile of the Mound Site.

Population information extracted from the 2000 Census shows that within a 10-mile radius of the Mound site, there are 340,000 residents, and within a 50-mile radius of the site, there are 3,127,000 residents. The primary agricultural activity in the area is raising field crops such as corn and soybeans. Approximately 10 percent of the agricultural land is devoted to livestock.

2.1.3 Geology and Hydrogeology

The geologic record preserved in the rocks underlying the site indicates that the area has been relatively stable since the beginning of the Paleozoic era more than 500 million years ago. There is no evidence indicating subsurface structural folding, significant stratigraphic thinning, or subsurface faulting. The bedrock consists of limestone, which is interbedded with shale layers at the site. No evidence of solution cavities or cavern development has been observed in any borings or outcrops in the Miamisburg area. The bedrock is overlain with glacial till, which exhibits some fracturing that allows infiltration of precipitation.

The aquifer system at the Mound site consists of two different hydrogeologic environments: groundwater flow through the bedrock beneath the hills, and groundwater flow within the unconsolidated glacial deposits and alluvium associated within the Buried Valley Aquifer in the Great Miami River valley (Figure 2–2). The bedrock flow system is dominated by fracture flow and is not considered a highly productive aquifer. The Buried Valley Aquifer is dominated by porous flow with interbedded gravel deposits providing the major pathway for water movement. The unconsolidated deposits are Quaternary Age sediments consisting of both glacial and fluvial deposits. The Buried Valley Aquifer is a highly productive aquifer capable of yielding a significant quantity of water and is designated a sole source aquifer.

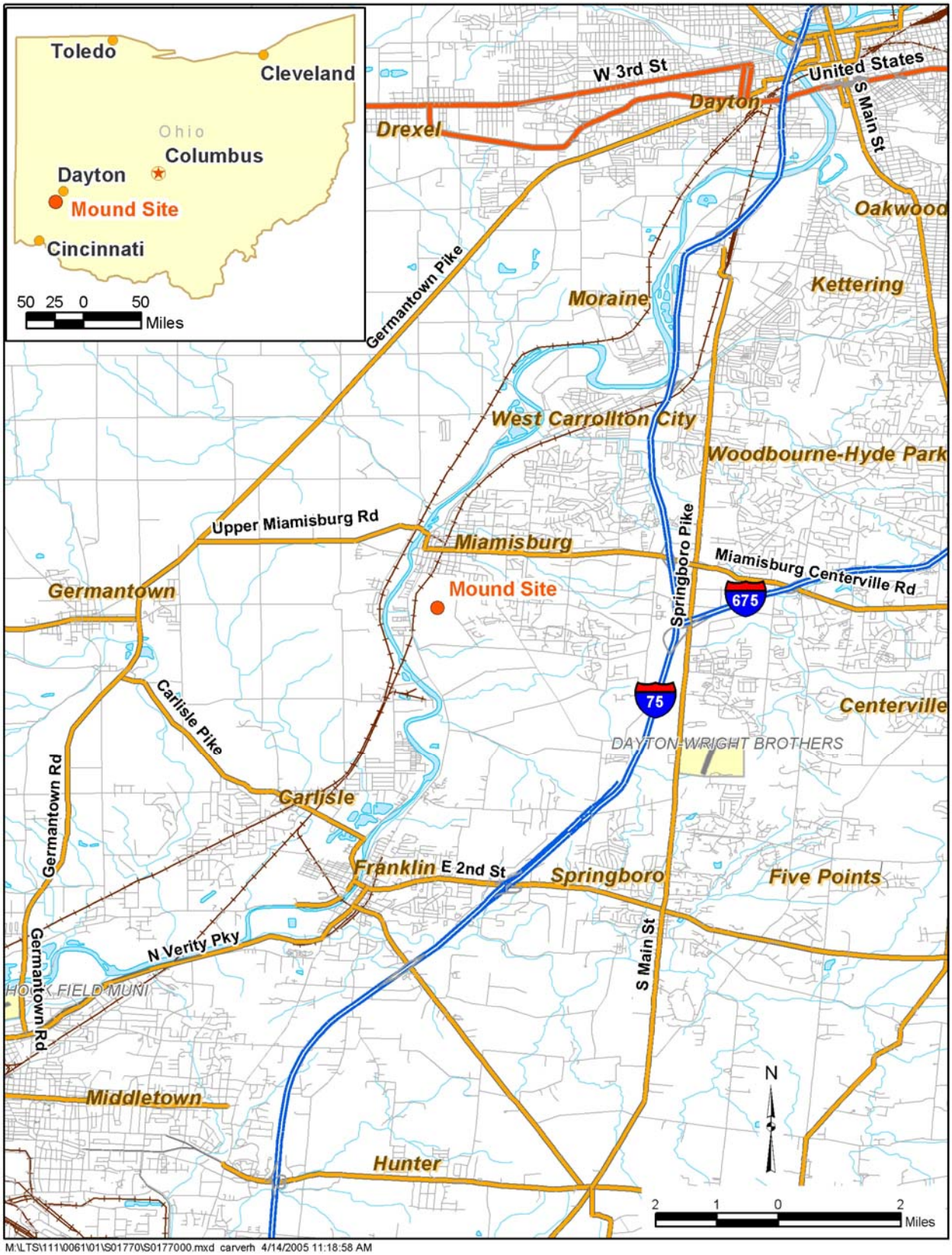

Figure 2–1. Location of the Mound Site

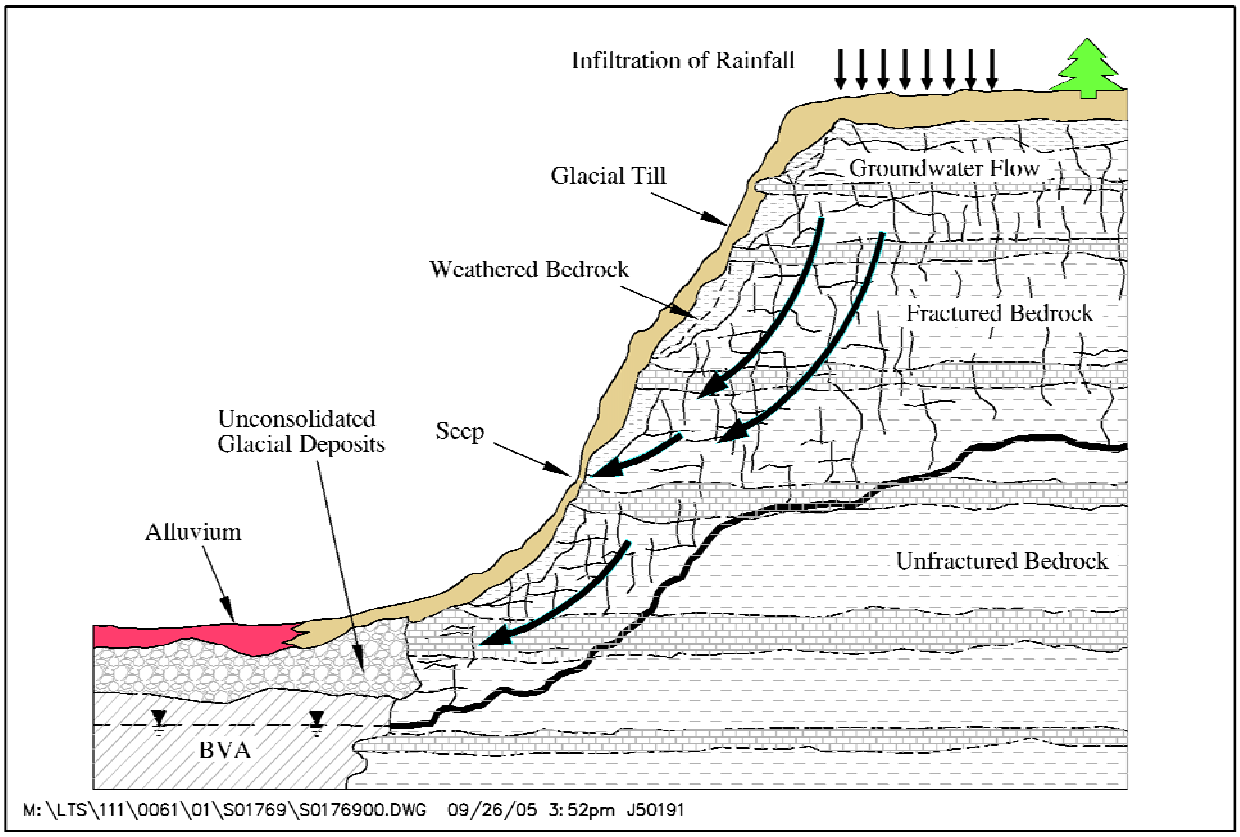

Figure 2–2. Generalized Groundwater Flow at the Mound Site

2.1.4 Climate

The climate in the southwestern portion of Ohio, including the Mound site, is moderate. The average annual precipitation rate is 33 inches per year, and winds are predominantly from the south-southwest. The average temperature in 2001 was 56 °F with a maximum of 98.6 °F and a minimum of 8.6 °F.

2.1.5 Topography

The Mound site sits atop an elevated area overlooking the city of Miamisburg, the Great Miami River, and the river plain area to the west. To the west of the plant is an abandoned section of the Miami-Erie Canal that parallels the river. An intermittent stream runs through the plant valley and drains to the river. Site elevations vary from 700 ft to 900 ft above sea level; most of the site is above 800 ft.

The Great Miami River is located approximately 1,500 ft west of the site. The typical non-flood stage of the Great Miami River is 682 ft MSL. The highest floodwater levels that can be reasonably postulated for the Great Miami River basin (100-year storm event) would result in flooding to 700 ft MSL. The western edge of parcel 4 lies within the 100-year floodplain of the Great Miami River (Figure 2–3).

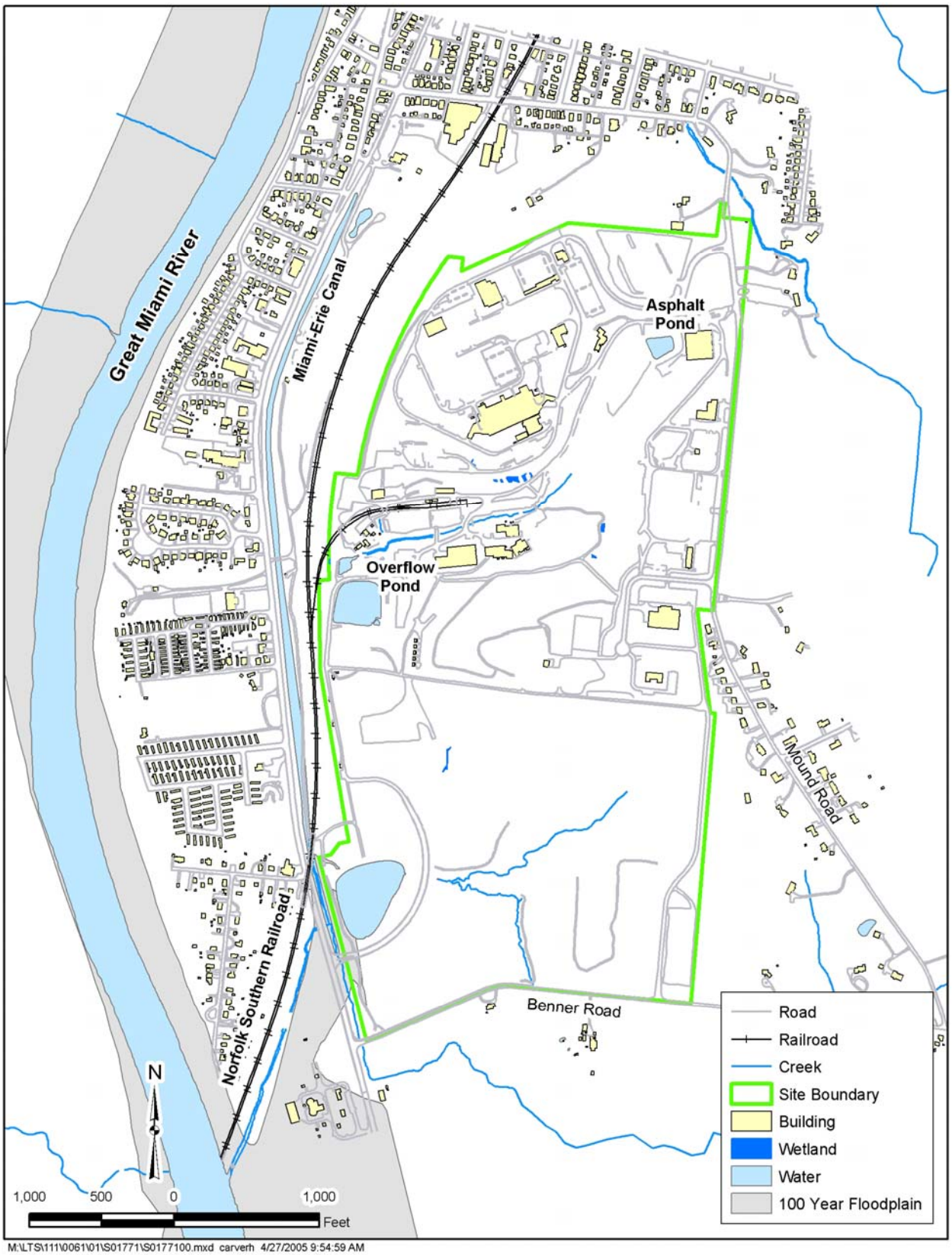

Figure 2–3. Surface Water Features and Areas within the 100-year Floodplain

2.1.6 Cultural, Natural, and Historic Preservation

Threatened and endangered species, floodplains, wetlands, regulated streams, cultural resources, and historic sites were evaluated at and proximate to the Mound site. The following is a summary of cultural, natural, and historic preservation evaluations or activities for the Mound Site:

- There are no threatened or endangered species, or critical habitats at the Mound Site. This has been confirmed by several agencies, including the U.S. Fish & Wildlife Service, Ohio Department of Natural Resources, and Dayton Museum of Natural History (DOE 1994a).
- There is 0.177 acre of jurisdictional wetland on the Mound Site that is comprised of nine individual wetlands, mainly along the south slope of what is known as the Main Hill (Figure 2–3). This has been confirmed the US Army Corps of Engineers (USACE) and DOE has taken all necessary actions to preserve those wetland resources as discussed in the *Delineation of Federal Wetlands and Other Waters of the U.S. as the 1998 Mound Plan Property* (DOE 1999a). During the underground lines removal project, one wetland area was impacted. In lieu of reconstruction the 0.007 acre wetland at the site, the DOE purchased credits from the Ohio Wetlands Foundation for the restoration and monitoring of 0.1 acres of wetlands at the Caesar Creek wetland mitigation site.
- The seeps are also regulated wetlands. It is probable that a source of water for these seeps is from plant infrastructure such as pipe chases or leaking water lines. If this source of water to the seeps is eliminated once cleanup of the site is completed, then the seeps may revert to upland and may no longer be regulated waters (DOE 1999a). The property owner would have to request removal from the USACE (see Section 3.1.2).
- The DOE sedimentation basins were eliminated as regulated waters during the wetland delineation process (DOE 1999a), even though those areas support wetland vegetation; however, if the use of these sedimentation basins changes, then those areas may become subject to regulation. An example of a change in use would be if a future property owner no longer maintains (and uses) the sedimentation basins left behind after DOE transfer of the Mound Site.
- Several streams on the Mound Site were also identified by the USACE as regulated waters (DOE 1999a). The main ditch running through the North Property is the largest of the regulated streams (Figure 2–3). Since all wetlands and streams on the Mound Site are considered isolated waters or headwaters, disturbance of those areas is potentially permissible under the Nationwide Permit program. Permitting, if necessary, will be responsibility of the appropriate parcel owner (see Section 3.1.2).
- There are no cultural resources at the Mound Site, as confirmed by the Ohio Historic Preservation Officer (OHPO) and other subject matter experts (DOE 1987).
- In mid-1998, the OHPO, under authorization of the National Historic Preservation Act, declared the original 17 buildings constructed in 1948 to be historic buildings and eligible for placement on the National Register of Historic Places (NRHP). Under the cleanup plan for the Mound Site, these 17 buildings were demolished or transferred to the MMCIC. In October 2000, the DOE and the Advisory Council on Historic Preservation (ACHP) signed a Memorandum of Agreement (DOE 2000a) outlined mitigative measured for these

17 buildings. As mitigation for demolition of buildings that are eligible for inclusion of the NRHP, DOE prepared documentation packages for submission to the National Park Service for incorporation into the National Archive and/or to the OHPO for incorporation into the OHPO's archive. The type of documentation package prepared for the historic buildings was determined by the function of the building (i.e., operational or administrative). The documentation packages fulfilled the requirements of Section 106 of the NHPA for all 17 buildings eligible for the NRHP, and for the Mound Site.

2.2 Mound Site History

This section provides a summary of pertinent historical information regarding the operation, remediation, and transfer of the Mound site.

2.2.1 Operational History

Construction of the Mound facility began in 1946 and served to support the early atomic weapons programs. It later grew into an integrated research, development, and production facility performing work in support of DOE weapons and energy programs, with emphasis on explosives and nuclear technology. The plant, which was in operation from 1948 to 2003, was situated on 182 acres. In 1981, DOE purchased an additional 124 acres of land south of the original property; however, the property remained undeveloped. At one time the Mound facility was comprised of approximately 116 buildings (Figure 2–4). More detailed information regarding each building, production processes, and waste streams is given in *Operable Unit 9; Site Scoping Report, Volume 7; Waste Management* (DOE 1994b).

2.2.2 Remedial Actions

In 1984, the Environmental Restoration Program at the Mound Site was established to collect and assess environmental data in order to evaluate both the nature and extent of contamination and to identify potential exposure pathways and potential human and environmental receptors (i.e., develop a conceptual site model). Comprehensive chemical and radionuclide characterizations identified contamination in four different media (soil, groundwater, surface water, and buildings/structures) at the Mound Plant. The majority of contamination is low-level radioactivity in soil and volatile organic compounds in groundwater (DOE 1994b).

The Mound site was placed on the National Priorities List (NPL) in November 1989 because of chemical contamination present in the site groundwater and the site's proximity to a sole source aquifer. A Federal Facilities Agreement (FFA) between the DOE and the USEPA was signed in October 1990. In July 1993, the FFA became a triparpite agreement through the addition of the OEPA. The FFA established a procedural framework and schedule for developing appropriate response actions and facilitated cooperation and exchange of information among the agencies.

Preliminary assessment of contamination at the site identified 124 locations of actual or suspected releases. Originally, these locations were grouped into nine (9) operable units (OUs) based on waste type and/or geographical proximity. As CERCLA activities progressed, changes to the number and composition of the OUs were warranted.

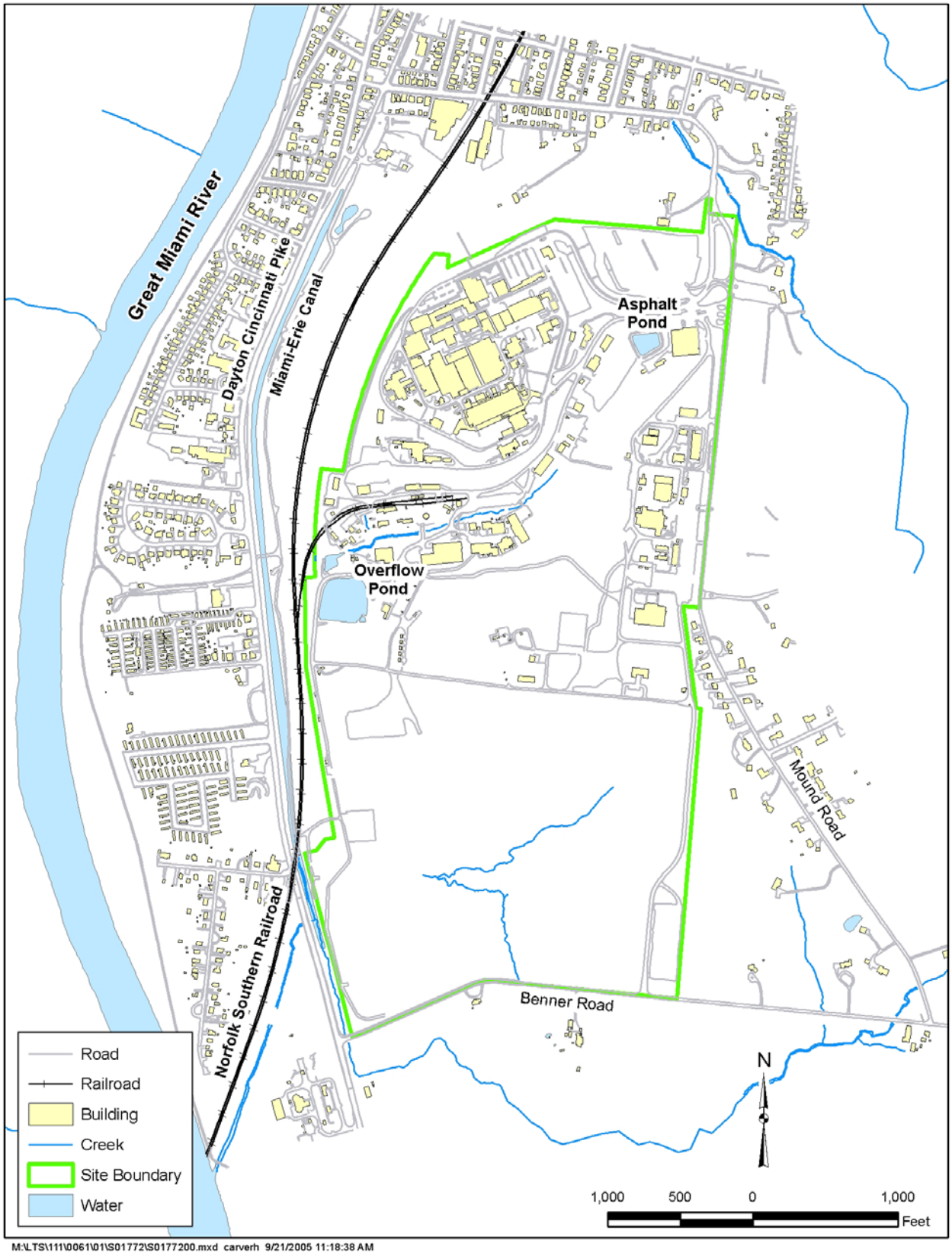

Figure 2–4. Layout of the Mound Site During Operational Period

Volatile organic compound (VOC) contamination in the Buried Valley Aquifer, a sole-source aquifer, originating from the site's former solid waste landfill is addressed under OU 1 (also identified as Area B). This OU occupies approximately 4 acres in the southwestern portion of the Mound Plant (Figure 2–5) and includes a former landfill site. Much of the waste was later relocated and encapsulated in the site's sanitary landfill constructed in 1977 located within the OU-1 area. There are known releases of VOCs from OU 1 into the adjacent Buried Valley Aquifer. Tritium was detected in wells in OU 1; however, the levels are below the drinking water standard. More detailed discussions can be found in the OU-9 Scoping documents (DOE 1994) and the *OU-1 Technical Team Evaluation* (DOE 2004a).

A Record of Decision (DOE 1995) was approved in 1995. The selected remedy of controlling groundwater contamination at OU 1 is collection, treatment, and disposal of groundwater. A groundwater pump and treat system is used to create a hydraulic barrier to contain contaminated groundwater in the vicinity of the landfill. Groundwater is continuously pumped from a series of extraction wells and passed through a treatment system to remove VOCs before the water is discharged. Surface water controls, ICs to limit site access, and long-term groundwater monitoring are part of the remedy, as well.

In 1996, after the pump and treat system became operational; the MCP began investigating methods for completing the remediation of OU-1 faster and more cost effectively. After studying approximately 20 innovative technologies that addressed VOCs in soil and water, a soil vapor extraction system was selected and installed in 1996 to enhance treatment of the VOC contamination. An ESD is being developed to incorporate the SVE system into the selected remedy and to specify appropriate restriction (ICs) on the use of the OU-1 area to prevent unacceptable exposure to residual contamination remaining in the landfill area. This ESD will also incorporate a soil cover for the former landfill area in OU-1. This cover will be designed to prevent exposure to residual contamination in soil and control surface water run-off in this area.

The Miami-Erie Canal is an area outside the Mound Property boundary (Figure 2–5) that was never owned by the DOE; however, the canal was included on the NPL due to impact from operational and accidental releases from the facility. The Miami-Erie Canal comprises OU-4, which also includes the Overflow Creek, the drainage ditch from the site, the runoff hollow between the railroad tracks and the site, and the South Pond in the Miamisburg City Park. The drainage ditch from the Plant site to the canal conveyed surface water runoff; however, the canal no longer receives effluent from the site. The canal had sediment contaminated with plutonium-238 and tritium. The canal underwent a soil cleanup, primarily for plutonium, ending in 1998.

A no-action Record of Decision (DOE 2002) regarding the soil/sediment in the canal was approved in 2004. Tritium contamination from seepage of surface water has been detected in the groundwater beneath the canal. This impact will be addressed in the CERCLA process for the final Site Wide ROD.

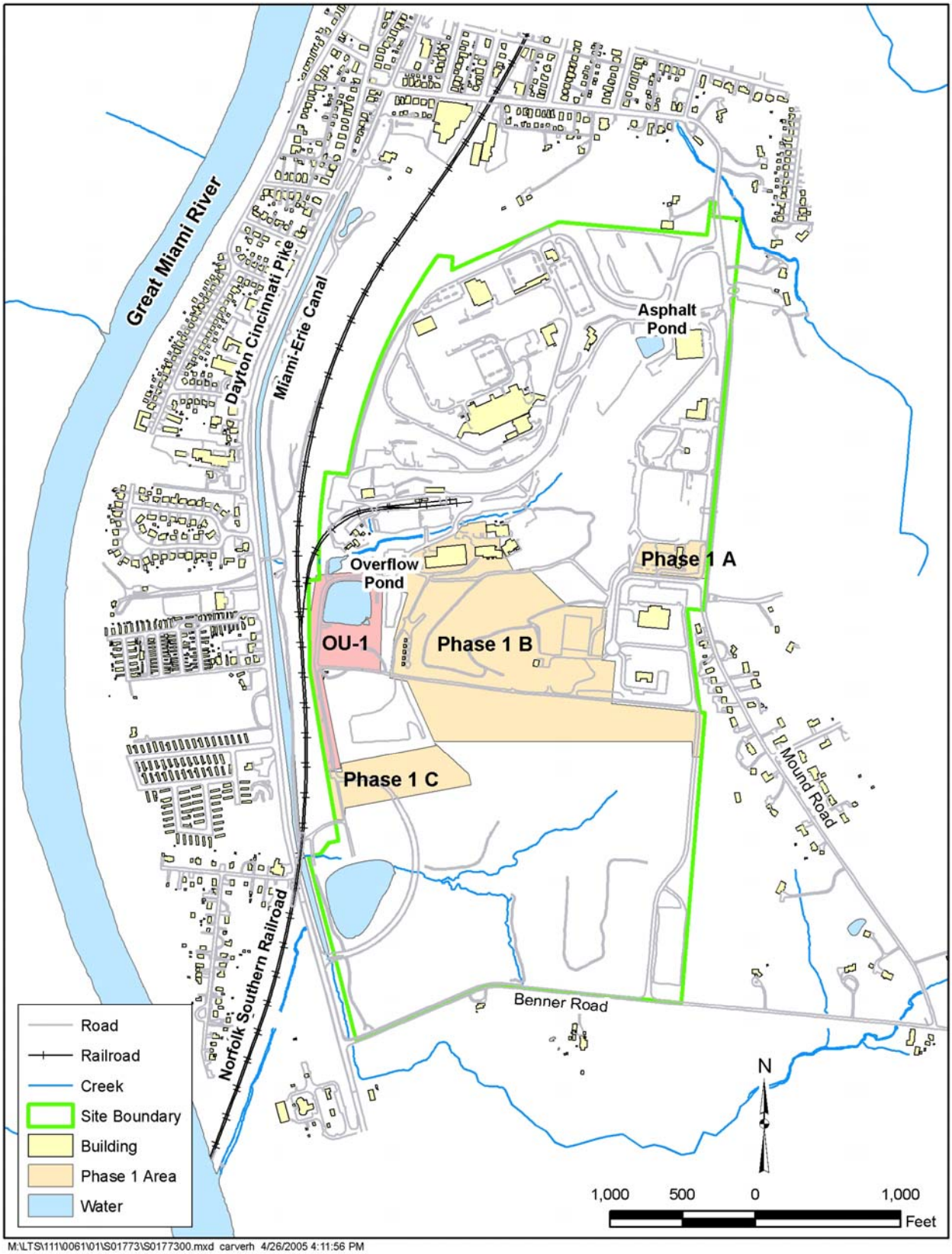

Figure 2–5. Location of OU-1, Phase I and the Miami-Erie Canal at the Mound Site

The following RODs for several land parcels or release blocks (Figure 2–6) have been approved:

1. *Operable Unit 1 Record of Decision* – (former waste disposal sites) (DOE 1995);
2. *Operable Unit 10 Record of Decision* – (Release Block D) (DOE 1999b);
3. *Operable Unit 11 Record of Decision* – (Release Block H) (DOE 1999c);
4. *Parcel 3 Record of Decision* - (GP1 and GH) (DOE 2001a); and
5. *Parcel 4 Record of Decision* - (South Property) (DOE 2001b).

This list is subject to change/update until this document becomes effective (see Section 1.2). The selected remedy stipulated in the RODs is ICs on future land use and is as follows:

- Ensure that industrial land use is maintained and residential land use is prohibited,
- Prohibit the use of groundwater,
- Prohibit removal of soils from the Mound Site boundary without prior agency approval.
- Provide site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring, and

Phase I property (which is comprised of 3 separate areas designated as A, B, and C) is located in the south-southeastern portion of the Mound plant site. This parcel contains monitoring wells that are screened in both the permeable glacial sediments of the Buried Valley Aquifer and the relatively impermeable bedrock aquifer system. Currently groundwater monitoring wells and one seep within the Phase I boundary show exceedances of the MCLs for TCE. Groundwater in the area also exceeds the MCLs for radium 226/228 (combined) and barium. Wells have exceeded the MCL for nickels and chromium; however recent data indicates concentrations below the respective MCLs.

A Record of Decision (DOE 2003b) was approved in 2003. The selected remedy for TCE contamination in Phase I is monitored natural attenuation with ICs. Groundwater and seeps will be monitored for TCE and its degradation productions to verify that the concentration of TCE is stable or decreasing due to natural attenuation. Groundwater monitoring will also provide assurance that the TCE observed in Phase I is not impacting the Buried Valley Aquifer. ICs the same as outlined for the other parcels and operable units are also part of the remedy.

To date, 439 potential release sites (PRS) have been identified at the Mound Site. These consist of 261 soils areas and 178 building sites. Of the soils sites, 209 have been binned for no further action, 43 required a response action, and 9 have been determined that no further action is required. Of the building sites, 39 have been binned for no further action, 133 had a response action required, and 6 remain to be assessed. The process for evaluation of PRSs is presented in the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach* (DOE 1999d).

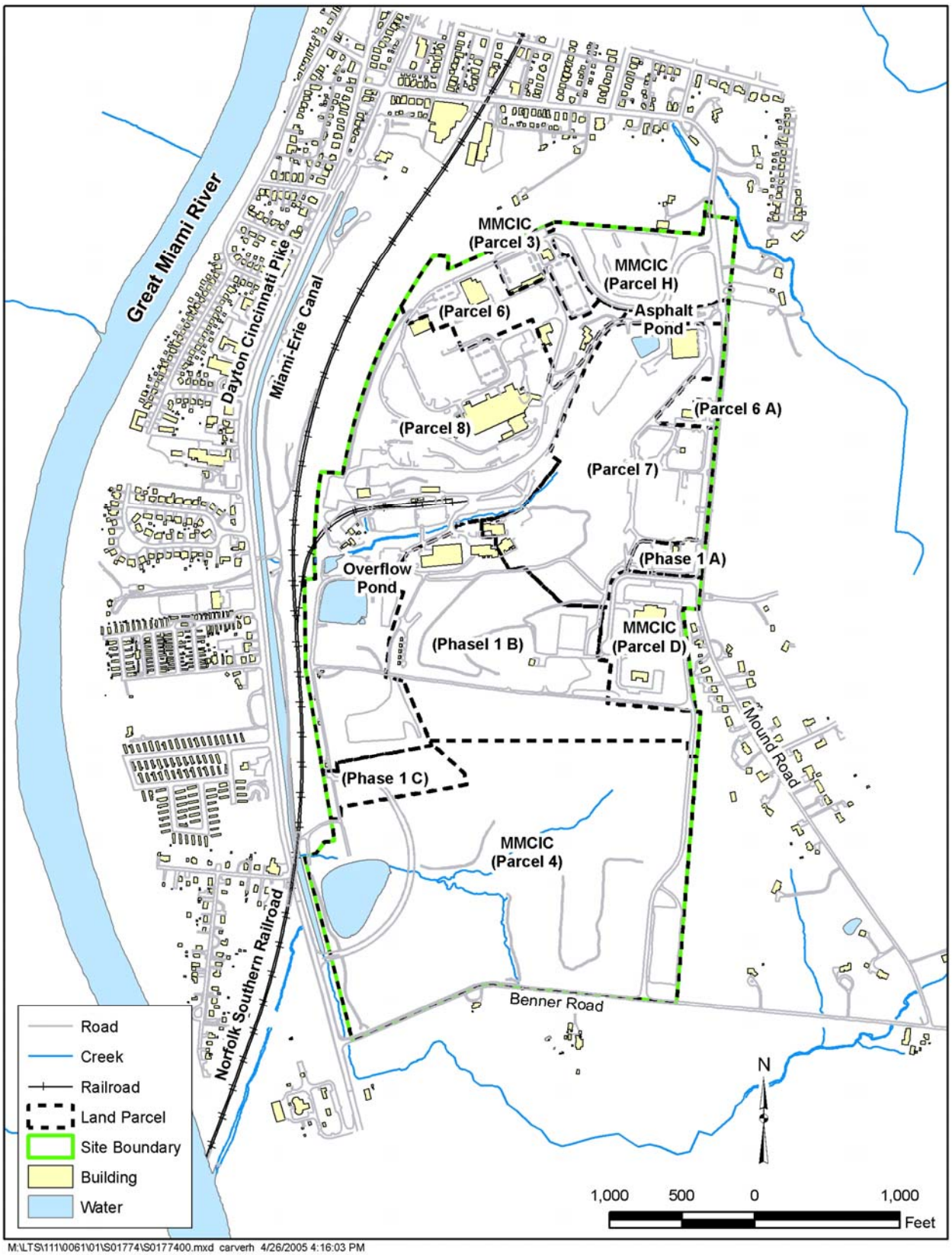

Figure 2–6. Land Parcels at the Mound Site

2.2.3 Property Transfer History

The sales contract between DOE and the MMCIC, dated January 23, 1998, establishes that DOE will convey the entire Mound Site by discrete parcels, subject to the CERCLA §120 (h) – *Property Transfer of Federal Agency*. The property was clean to "industrial use" standards consistent with the exposure assumptions provide in the *Mound 2000 Residual Risk Evaluation Methodology* (DOE 1997). Except for the effects of remediation activities, the property was or will be transferred with no repair, replacements, or rebuild of areas. Once regulatory approval is received via approval of the Environmental Summary, each parcel of land is transferred via a quitclaim deed. The quitclaim deed contains or refers to restrictions required under CERCLA to ensure that the parcel being transferred is protective of human health and the environment (i.e., as stipulated in the ROD). The preparation of the quitclaim deed, consequently, requires input from the CERCLA process. A copy of the Environmental Summary is also recorded with the deed. The quitclaim deed transfers ownership of the land and establishes that MMCIC will take the land. Although the deed does not contain a warranty for the land, DOE maintains responsibility for cleanup if contamination resulting from previous DOE activities (that pose a risk to human health and the environment) is discovered in the future (DOE 2003a).

DOE, the regulators, and the MMCIC have agreed that the future land used for the site is industrial and have evaluated two scenarios: commercial worker and construction worker. At closure, the following deed restrictions will be in effect across the entire site:

- Maintenance of industrial land use and prohibition of residential use,
- Prohibition against the use of groundwater,
- Prohibition against the removal of soils from the DOE property (as owned in 1998) without approval from USEPA, OEPA, and the Ohio Department of Health (ODH), and
- Site access for federal and state agencies for the purpose of sampling and monitoring.

2.3 Institutional Controls

Institutional controls (ICs) represent the remedy selected for the parcels and Phase I (Figure 2–6). These ICs are listed in each parcel-specific ROD (DOE 1995, DOE 1999b, DOE 1999c, DOE 2001a, DOE 2001b, and DOE 2003b). ICs are controls that reduce the potential for human exposure to residual contamination. ICs are non-engineered means, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. Detailed information on the ICs applied to these parcels is contained in parcel-specific CERCLA documents, primarily the *Residual Risk Evalua*tions and the *Records of Decision*.

Ownership of the parcels was transferred to MMCIC. As required by public law, DOE declared the parcels as excess and completed the process for property transfer as outlined in CERCLA §120 (h). The USEPA also approved of the property transfers. The quitclaim deed for each land parcel informs the property owner of the parcel-specific ICs embedded in the deed as deed restrictions. DOE imposed three deed restrictions on each parcel. In general terms, the three deed restrictions are as follows:

1. Soil cannot be removed from the Mound Site without prior regulatory approval,
2. Groundwater cannot be used without prior regulatory approval, and
3. Land use must remain industrial.

The above three deed restrictions remain attached to the land parcel through subsequent property transfers. The quitclaim deed references the *Environmental Summary*, which is the final document prepared under the Mound 2000 process for transfer of property. As an exhibit to the quitclaim deed, the *Environmental Summary* is a critical piece of information that must be passed on to subsequent property owners to ensure that corporate memory is retained on the rationale behind each deed restriction. Recording the quitclaim deed, which includes the *Environmental Summary* with the Montgomery County, Ohio Recorders Office, ensures that future property owners are aware of the deed restrictions associated with the Mound Site. These deed restrictions are used to ensure protection of human health and the environment for as long as residual contamination levels warrant.

2.3.1 Soil Removal

The first deed restriction applied to land parcels transferred to date pertains to the removal of soil from the Mound Site without prior written approval from USEPA, OEPA, and ODH. The soil at the site has not been evaluated for any other use other than on-site industrial use. Any off-site disposition without proper handling, sampling, and management could create an unacceptable risk to off-site receptors. The protocol for obtaining approval is contained in Attachment 7 of the *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plan Property*. As the OEPA is structured today, the decision authority for removal of soil from the Mound Site resides within the Office of Federal Facilities Oversight, Southwest District Office, located in Dayton, Ohio. Information outlined in Attachment 7 should be provided in writing to OEPA and Ohio Department of Health/Bureau of Radiation protection for each instance of proposed soil volume transport. Information about the cleanup process, background levels, and toxicology data is contained in or reference in the *MOUND 2000 Residual Risk Evaluation Methodology* (DOE 1997).

2.3.2 Restricted use of underlying groundwater

The second deed restriction prohibits the extraction, consumption, exposure or use in any way of the groundwater underlying the Mound site, without prior written approval of the USEPA and OEPA. The protocol for obtaining approval to install a groundwater well is contained Attachment 8 in *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plan Property*. The protocol was developed to assist and inform the public, and future property owners, of the actions needed to request the DOE's permission to use groundwater on the Mound Site.

2.3.3 Industrial Land Use

The third deed restriction prohibits the land use to be anything other than industrial. The *Proposed Plan* and ROD for each land parcel state that land use will be for industrial use only. The RODs further detail specific land uses that will not be permitted onsite, but the list in the ROD is not meant to be inclusive. Land parcels may not be used for any residential or farming activities, or any other activities that could result in the chronic exposure of children under 18 years of age to soil or groundwater from the premises. To date, restricted land uses listed in the RODs include, but are not limited to:

- Single or multi family dwellings or rental units;

- Day care facilities;
- Schools or other educational facilities for children under 18 years of age; and
- Community centers, playgrounds, or other recreational or religious facilities for children under 18 years of age.

2.4 Contaminant Nature and Extent

Comprehensive chemical and radiological characterizations have been performed at various locations throughout the Mound Site. Contamination has been found in four different media (soil, groundwater, surface water, and buildings/structures) at the Mound Plant with the majority as low level radioactivity in soil. A more detailed discussion regarding the extent of known contamination in each of these media is presented in the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach* (DOE 1999d).

2.5 Final Physical Site Conditions

Closure at the Mound site was achieved on _____, 200__. At that time, the ownership of the all of the land parcels has been transferred to MMCIC. The Mound site occupies 306 acres. Twenty of the original buildings were retained for industrial use (Figure 2–7).

The OU-1 Pump and Treat system, including extraction wells, treatment plant, and discharge point will remain after transfer of the Mound site. DEO-EM is preparing an ESD to incorporate the SVE system and a soil cover fore the landfill area into the remedy for OU-1. Twenty-six groundwater monitoring wells and 1 seep will also be retained for long-term monitoring of OU-1 and Phase 1. The DOE through this LTS&M Plan will maintain these facilities and structures (see Section 3).

Additional wells and/or seeps may be included into this LTS&M program after completion of the final assessments for the Mound site. These locations will be added, if necessary, into this Plan at that time.

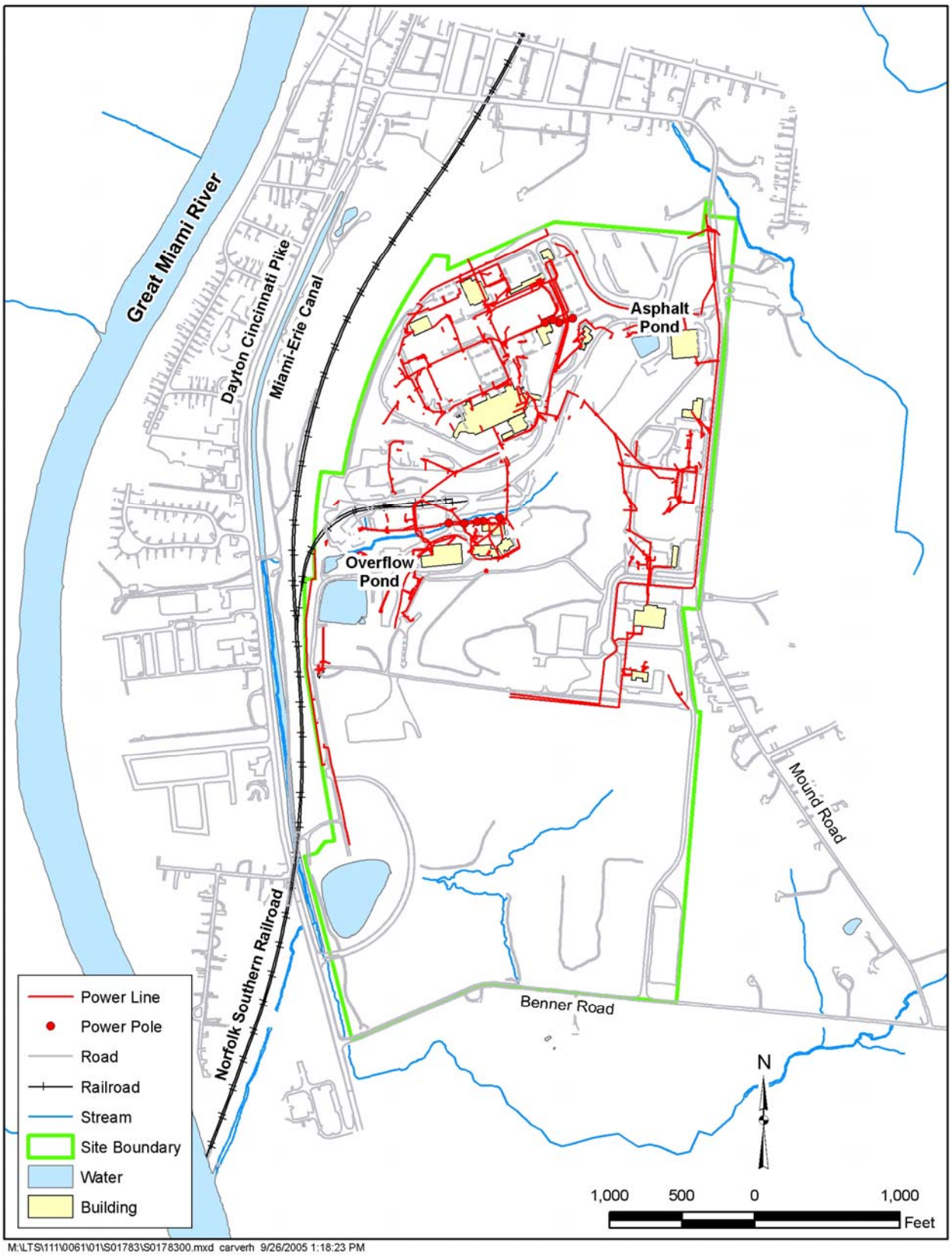

Figure 2–7. Final Configuration of the Mound Site (FY 2006)

End of current text

3.0 Long-Term Surveillance and Maintenance Implementation and Programs

This LTS&M Plan identifies long-term commitments to operation and maintenance of the remedies selected for the Miamisburg Closure Project at the Mound Site in the RODs. This plan summarizes operation and maintenance requirements specified in *Operations and Maintenance Plan for Implementation of Institutional Controls at the 1998 Mound Plant Property* (DOE 2003a), *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2000b), and *Phase I Groundwater Monitoring Plan* (DOE 2003c). The purpose of LTS&M is to meet the objectives listed in Section 1.1 of this plan. When necessary, the required operations and maintenance (O&M) plans are referenced. These O&M Plans are contained in Volume 2 of this Plan.

This LTS&M Plan refers to the established methods and procedures specific to the Mound Site to control risk and maintain protectiveness. DOE will maintain protectiveness at the site through a combination of maintaining a local presence, conducting regular inspections, conducting environmental sampling and other site operations, maintaining and enforcing ICs, and working with stakeholders and regulators to provide site awareness and knowledge of current conditions.

3.1 Roles and Responsibilities

This portion of the document summarizes the roles and the scope to responsibilities of DOE and other involved parties, and how these roles relate to those of the regulators.

3.1.1 Role of DOE

The DOE Office of Legacy Management (OLM) has LTS&M responsibility of all DOE remedial action sites, disposal sites, and other sites, as assigned, that (1) have no ongoing DOE mission and (2) are not part of a larger DOE facility. Responsibility for surveillance and maintenance of the Miamisburg Closure Project at the Mound Site was assigned to OLM. OLM was established primarily to provide a separate focus for DOE's long-term commitments and responsibilities at sites without an on-going long-term mission.

The Mound site was remediated under *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA). Post-closure requirements for operating the selected remedies are specified in this LTS&M Plan. One of the aspects of the remedy chosen by DOE is that DOE will conduct surveillance and maintenance activities at the Miamisburg Closure Project at the Mound Site in accordance with the operations and maintenance plans (DOE 2003a, DOE 2003c, and DOE 2000b) to protect human health and the environment and to comply with applicable regulations. DOE, or its successors, is responsible for implementing, reporting, monitoring, maintaining and enforcing the various remedies and ICs. DOE is responsible to periodically review the property owners (presently, MMCIC) plans for future development to maintain that they are consistent with ICs. DOE also has the responsibility to enforce the deed restrictions if any non-compliance is detected. DOE is responsible for the hazardous substances that remain at the site or are discovered (and are attributable to previous DOE operations) after parcels have transferred ownership.

Because of the long-lived nature of some of the residual contaminants remaining on site, the federal government will provide surveillance and maintenance services at the Miamisburg Closure Project at the Mound Site so long as remedies and ICs that are required to protect human health and the environment remain in effect.

DOE is also responsible for responding to calls and inquires from the public, regulators, and other stakeholders. DOE will serve as the first contact for any issues dealing with requests to remove soil from the site or to install groundwater wells.

3.1.2 Role of the Property Owner

For any areas that remain in DOE ownership, DOE will be responsible for maintaining the land use restrictions specified for each land parcel. For those portions of the Mound Site that are transferred to others, the property owner, which as of the date of this Plan is MMCIC, is responsible for complying with the deed restrictions specified in the quitclaim deed for each individual parcel. Particularly, the property owner agrees not to use of allow the use of the site for any residential or farming activity or for any other activities that could result in the chronic exposure of children under 18 years of age to soil or groundwater. Also, the property owner shall contact DOE to resolve any questions which may arise as to whether an activity would be considered a restricted land use. After DOE transfers ownership of parcels, the new property owner is responsible for responding to any releases attributable to the property owner's operations.

Several areas that have been designated as wetlands (see Section 2.1.6) are present in parcels that have been transferred by DOE to MMCIC. Pursuant to 10 CFR Part 1022.5(d), when DOE property is proposed for disposal to non-Federal public or private parties, DOE must identify those uses that are restricted under Federal, state, or local wetland regulations. The US Army Corps of Engineers (USACE) and the State of Ohio regulates activities that may impact wetlands through the federal Clean Water Act. Accordingly, the owner of the site must adhere to these wetland regulations.

3.1.3 Role of Regulators

The USEPA - Region V, located in Chicago, Illinois, will provide regulatory oversight in consultation with OEPA for CERCLA activities at the Miamisburg Closure Project at the Mound Site. USEPA will also review and comment on CERCLA documents and 5-Year Review Reports. Once property is transferred, this agency is responsible for reviewing requests and issuing approval for usage of groundwater on the Miamisburg Closure Project. USEPA will be given the opportunity to participate in the annual site inspection. USEPA will be provided the reports for the annual inspections and CERCLA 5-Year Reviews.

OEPA, headquartered in Columbus, Ohio, oversees CERCLA activities at the Miamisburg Closure Project, approves site remedies and concurs with their ongoing implementation. OEPA will also review and comment on CERCLA documents and 5-Year Review Reports. Once property is transferred, this agency in cooperation with the Ohio Department of Health is also responsible for reviewing requests and issuing approval to remove soil from and usage of groundwater on the site. DOE also grants to the State of Ohio and reserves and retains for itself an irrevocable, permanent, and continuing right to enforce the covenants of the quitclaim deeds.

OEPA will be given the opportunity to participate in the annual site inspection and will be provided the reports for the annual inspections and CERCLA 5-year reviews.

3.1.4 Role of Stakeholders

Stakeholders may participate in DOE activities by reviewing documents, attending public meetings, and reporting concerns to DOE or regulatory agencies. Refer to Section 3.3 for more details on public participation and a listing of DOE contacts.

3.2 Revisions to the LTS&M Plan

DOE is responsible for the preparation, revision, and implementation of this LTS&M Plan, which includes procedures for site inspection, monitoring, and maintenance of the site, and, for managing remaining contamination. Surveillance and maintenance activities also include complying with regulatory reporting requirements and maintaining records pertaining to this site.

DOE will need to revise this plan in response to changes in the remedies or how the remedies are implemented (i.e., changes to the RODs or O&M Plans). If the change only entails administrative changes such as updating contact information, DOE may revise those portions of the plan and notify regulators and stakeholders of the revision.

Every 5 years, the effectiveness of the *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plant Property* will be assessed by the DOE in consultation with the USEPA, OEPA, and ODH (DOE 2003a). If modifications to this O&M Plan are made, review of this LTS&M Plan will be made and changes made, if warranted.

3.3 Public Participation and Communication

DOE-MCP has been using the Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach (DOE 1999d) and the Mound Land Transfer Process (DOE 1999e) as a basis for its public involvement efforts. DOE-OLM is formalizing those efforts into the *Mound Site Community Involvement Plan* (CIP) (Appendix B). All community relation activities will continue to follow USEPA and DOE guidance on public participation and comply with CERCLA public participation requirements. The CIP documents how DOE-OLM will ensure the public can be involved post-closure activities.

Promoting involvement of the public in the surveillance and maintenance process at the Miamisburg Closure Project at the Mound Site ensures that citizens' concerns are addressed and that relevant public information is provided. Active citizen involvement also promotes understanding of, and encourages informed participation in, the project by the general public. DOE seeks to encourage public participation by providing site information via public and DOE contacts, documents to the public for comment, and public meetings. The following are general descriptions of public participation activities that will occur at the Mound site.

3.3.1 Annual Report Document Review

Interested stakeholders will be notified of the availability of annual reports (see Section 3.6) when they are made available to the public at the Public Reading Room located at 955 Mound

Road in Miamisburg, OH and on the OLM website. This notification will ensure that the public is aware of site activities and changes. Comments and/or questions can be directed to the DOE contacts listed in Section 3.3.4 or as noted on the OLM website.

3.3.2 Public Notices on Institutional Controls

In the interest of prevention and protectiveness, DOE will provide information to the public relating to how the ICs apply to the land parcels at the Mound Site. DOE will place announcements in local newspapers on an annual basis, reminding landowners and all citizens of the specific ICs employed for each parcel. Specific information required in the notice is outlined in the *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plant Property.*

3.3.3 Informational Meetings and Briefings

OLM will hold public meetings to address post closure issues of importance to stakeholders. Meetings will likely b annually or as circumstances dictate. These meetings and briefings will provide information about O&M Activities and results from assessments. These meetings will allow OLM to work with stakeholders to address concerns relating to O&M issues.

3.3.4 Regulator, Stakeholder, and Responder Contacts

The purpose of the contact effort is to ensure that public and key community leaders, including federal, state, and local government officials, are kept informed of site activities and status changes. Contact information is maintained, including:

- Legislative and executive branch officials (federal, state, and local).
- USEPA - Region V.
- OEPA.
- MMCIC
- City of Miamisburg, Ohio.
- Interested citizens.
- Media (print and electronic).

The Official Contact List and the Distribution List will be maintained in the CIP (Appendix B) for the annual and the 5-Year Review Report, and other site announcements and notifications.

3.3.5 DOE Contacts

Contact information for the DOE staff responsible for implementing the LTS&M program will be posted both inside ad outside the Public Reading Room at 955 Mound Road in Miamisburg, OH. Posting this information should encourage the public to actively participate with DOE in the surveillance and maintenance process by reporting sightings or concerns such as non-conforming land use, damaged monitoring wells, or vandalism.

The DOE contact list will also serve an informational purpose by providing a mechanism for the public to submit questions or requests for information when there is no continuous on-site DOE presence. The following contact list will be maintained and revised on an annual basis, as necessary, to reflect the most current contact information. Changes to this list are minor changes to the LTS&M Plan, to be issued as part of an update, but will not cause the issuance of a revision to the LTS&M Plan.

- Art Kleinrath, LM-50, Grand Junction Site
  U.S. Department of Energy
  2597 B 3/4 Road, Grand Junction, CO 81503
  (970) 248-6037

- Grand Junction 24-Hour Monitored Security Telephone Numbers
  (877) 695-5322
  (970) 248-6070

- Website
  http://www.lm.doe.gov

3.4 Routine Site Inspections

DOE will inspect the Mound Site to ensure the remedies and controls remain protective and viable, including:

- Confirm that ICs remain effective,
- Confirm that treatment and monitoring systems are operating correctly,
- Confirm that target criteria for the remedies have been meet, and
- Determine if maintenance or additional monitoring is needed.

3.4.1 Inspection Frequency

DOE will conduct a formal inspection of the Mound Site annually. DOE will notify USEPA and OEPA and interested stakeholders of the inspection at least 30 days before the scheduled inspection date.

3.4.2 Inspection Checklist

Site inspections are guided by checklists that address the performance of each inspection. The annual inspection checklist for the Mound Site is contained in the *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plan Property*. A current site map or aerial photograph is generally used to record field notes, photograph locations, and other annotations of inspection findings. The map(s) and/or photo (s) will become a part of the permanent site record.

At the conclusion of a site inspection, inspectors will note revisions to the applicable checklist in anticipation of the next site inspection. The checklists are again reviewed and revised as necessary before each inspection. Revisions to the checklists may include inspection instructions

addressing new observations, notes about maintenance conducted since the previous inspection, or progressive changes in site conditions. Notes of specific site features to be inspected and compared to current conditions for change will be included in the following annual inspection list.

In support of the CERCLA 5-year reviews, inspectors will review the Comprehensive 5-Year Review Guidance (see Section 3.6) prior to each annual inspection in order to revise the checklist to accommodate the site 5-year review.

3.4.3 Institutional Controls Assessment

ICs comprise all, or part of, the remedy for land parcels at the Mound site that have completed the CERCLA §120 (h) process for property transfer. In general, DOE will assess the effectiveness of ICs applied to the Mound Site on an annual basis. The DOE may also, at any time, conduct a review of the ICs if there is reason to believe a degradation of any control has occurred. However, the RODs for each parcel state that DOE can petition the regulators to decrease the assessment frequency (e.g., to every 5 years). DOE will present the annual assessment of ICs in the annual report.

The assessment of ICs will include a visual inspection of the site supported with review of aerial photography. A complete description of the assessment of ICs, including a checklist, is contained in the *Operation and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plant Property* (DOE 1987). The checklist is in Attachment 6 of this O&M Plan.

Traditional two-dimensional photography will be performed on an annual basis to support the assessment of IC's. If it is determined that new series of aerial photographs would add little value to the inspection, DOE may use historical aerial photographs to support the inspection. Digitized aerial surveys will be performed to support the 5-year reviews.

3.4.4 OU-1 Pump and Treat System Inspection

During the annual inspection, operation and maintenance records and logbooks will be reviewed for completeness and information of the performance of the system. Inspectors will accompany system operators on routine walk-downs and inspections to verify accuracy and identify deficiencies that may affect the performance of the system. The operational requirements for this system are given in the *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2000b).

3.4.5 Inspection Personnel

DOE or its designated agent will perform inspections and assessments. Typically, two inspectors will perform annual inspections. Inspectors will be experienced engineers or scientists who have the required knowledge, skills, and abilities to evaluate site conditions and recognize potential or actual problems. Inspectors will be assigned for a given inspection of the Mound site on the basis of site conditions and inspector expertise. Areas of expertise may include civil, geotechnical, and geological engineering; geology, hydrology, biology, and environmental science (e.g., ecology, soils, or range management). If conditions warrant, more than two inspectors may be assigned to the inspection to evaluate serious or unusual problems and make appropriate recommendations

3.5 Follow Up Inspections

Follow-up inspections are unscheduled inspections that are conducted in response to threatening or unusual site conditions. DOE may conduct follow-up inspections if the following occurs:

- A condition is identified during the routine site inspection or other site visit that requires personnel with specific expertise to return to the site to evaluate the condition.

- DOE is notified by a citizen, employee, or federal, state, or local agency that conditions at the site are substantially changed from before.

Once a condition or concern is identified at the site, DOE personnel will evaluate the information and decide whether to respond with a follow-up inspection. At any time, DOE may request the assistance of local authorities (i.e., law enforcement, fire protection, city engineer, etc.) to provide an initial visual reconnaissance and confirm the seriousness of a reported condition at the site before scheduling a follow-up inspection. DOE will notify USEPA and OEPA of a follow-up inspection upon identifying the need to conduct such an inspection.

Specific conditions that may necessitate a follow-up inspection include violation of ICs, vandalism, or the need to revisit the site to evaluate, define, or conduct non-scheduled or emergency maintenance tasks. Conditions that may require a more immediate follow-up inspection include extreme weather, seismic events, and disclosure of deliberate human activity that threatens the integrity of physical structures (i.e., treatment facilities, well, etc.). DOE will evaluate risk when scheduling follow-up inspections. Urgency of the follow-up inspection will be in proportion to the seriousness of the condition. Inspectors assigned to follow-up inspections will be selected on the same basis as for routine site inspection.

In the event of an incident or activity that threatens or compromises ICs or poses a risk of exposure to or release of known contaminants, DOE will follow the procedures outlined in the appropriate O & M Plans (DOE 2003a, DOE 2003c, and DOE 2000b) or the actions identified in Section 3.9 - *Emergencies, Contingency Planning, and Corrective Action*.

Results of follow-up inspections will be included in the next annual inspection report. Separate reports will not be prepared unless DOE determines it advisable to notify USEPA, OEPA, or another outside agency of a situation at the site that remains uncorrected.

If follow-up inspections are required for more serious reasons, DOE will submit to USEPA, OEPA, and MMCIC a preliminary report of the follow-up inspection within 120 days. These reasons may include situations that could result in a compromise or failure of a treatment or containment system or situations that could result in unacceptable risk to the public or the environment. Copies of the report will be available to the public upon request.

3.6 Annual Report

Results of annual IC assessment and site inspections will be reported to USEPA, OEPA, and ODH. The report will be issued no later than June 13 of the year in which the review was conducted (DOE 2003a). DOE will post the final report on the Internet (www.lm.doe.gov) and

submit it to the Information Repository and to the agencies and stakeholders listed on the distribution list in the *Community Involvement Plan*. In the report, DOE also will address surveillance and maintenance inspection results for the previous 12 months and will include descriptions of the cause and outcome of events that require notification of local, state, or federal officials. The report will also present a listing of new documents included in the Information Repository, including Administrative Records, since the last inspection.

An annual report will also be prepared to compile all groundwater monitoring information from Phase I and OU-1. The annual report will include analytical results, trend analyses, interpretations and operational changes that may have occurred. The report will also identify any maintenance or repair activities associated with the monitoring wells. The report will document the progress of the monitored natural attenuation remedy in the Phase I area towards meeting the remedial objectives (DOE 2003c). An evaluation of the performance of the OU-1 pump and treat remedy as well as groundwater quality and hydraulic will be included.

3.7 Site Maintenance and Operations

3.7.1 OU-1 Groundwater Treatment System

OU-1 occupies approximately 4 acres in the southwestern portion of the Mound Site (Figure 3–1). There are known releases of VOCs from OU-1 into the adjacent Buried Valley Aquifer. The OU-1 remedial action was designed to control groundwater contamination (primarily low-level VOCs), to prevent migration of contamination toward the DOE's drinking water production wells, and to minimize exposure to potential receptors (DOE 2002). This action is being implemented through the collection and treatment of contaminated groundwater and discharge of the treated water. The major components of this remedy include:

- Treatment of the extracted groundwater to remove the VOCs using air stripping;
- Discharge of the treated groundwater to the Great Miami River;
- Monitoring of the chemical properties of the groundwater system;
- Monitoring of the hydraulic behavior of the groundwater system; and
- Monitoring of the discharge effluent.
- Period testing of the OU-1 extraction system (rebound testing).

An ESD is being developed to incorporate the SVE system into the selected remedy and to specify appropriate restriction (ICs) on the use of the OU-1 area to prevent unacceptable exposure to residual contamination remaining in the landfill area. This ESD will also incorporate a soil cover for the former landfill area in OU-1. This cover will be designed to prevent exposure to residual contamination in soil and control surface water run-off in this area. More information will be added when this ESD is approved by the regulators.

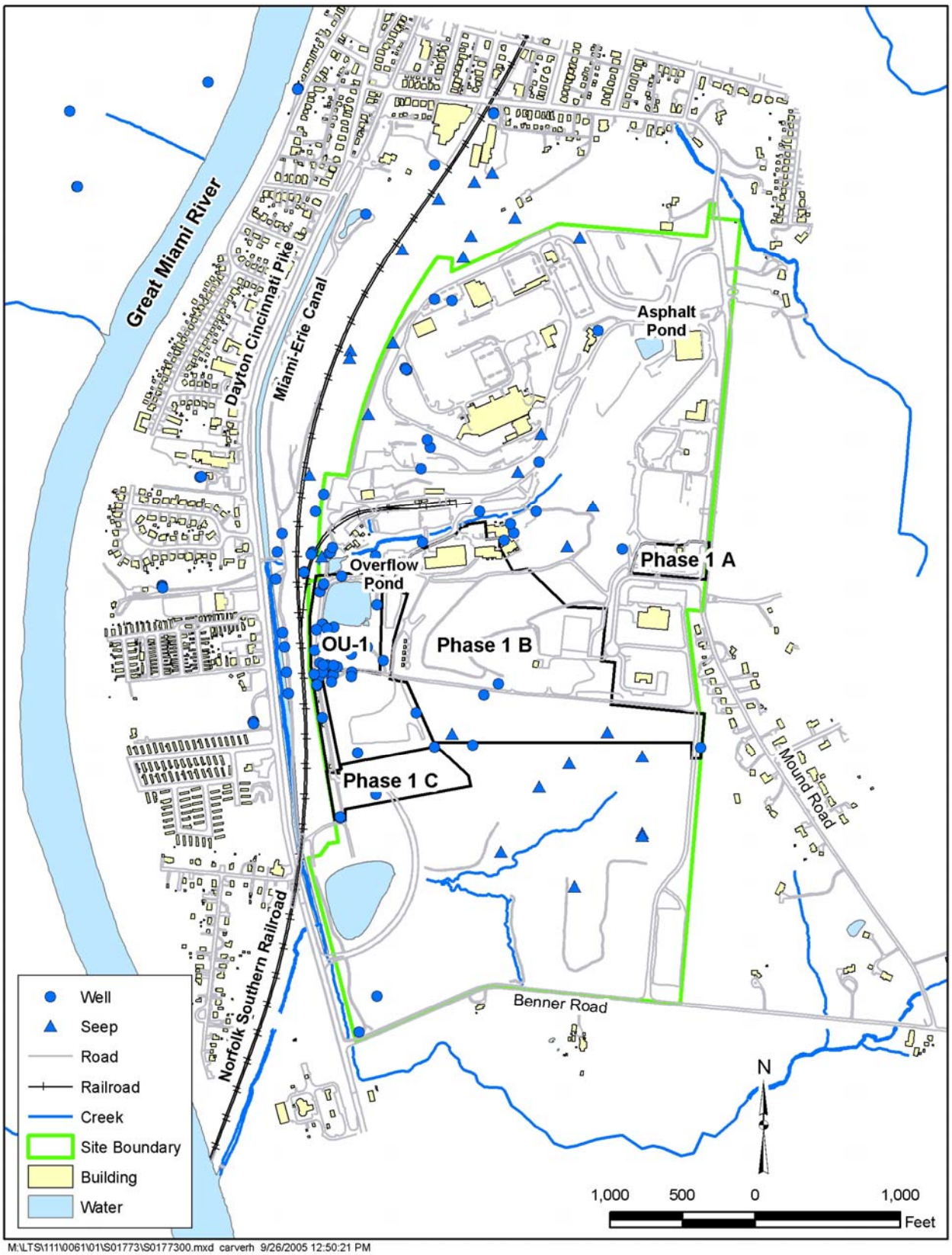

Figure 3–1. Location of Wells and Seeps at the Mound Site (as of September 2005)

3.7.1.1 Pump and Treat System Maintenance

The specifics of the groundwater collection and treatment system are documented in the *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2003a). Regular inspection of equipment and processes/procedures and equipment maintenance and review of routine documentation (logs, forms, etc.) is required for continued effective operation of the system.

3.7.1.2 Discharge

The effluent, which is also known as Outfall 003, from the treatment plant will be monitored. The effluent is sampled using an automatic sampler located in Building 300. The operation and maintenance of this sampler during routine operation and system startup is discussed in the *OU-1 Pump and Treatment Operation and Maintenance Plan*. The performance of the treatment system will be assessed by sampling both the influent and effluent of the treatment plant as outlined in Section 7 of the O&M Plan.

3.7.1.3 Groundwater Quality Measurements

Sampling of selected groundwater monitoring wells (Figure 3–1) for volatile organic compounds will be performed as specified in Section 8 of the *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2000b) and summarized in Table 3–1. Data will be analyzed to determine sustained downward trends as proof of successful capture of the plume. Results will be submitted to the USEPA and the OEPA.

Table 3–1. Groundwater Monitoring for OU-1

Location	VOC Analysis	Groundwater Hydraulic Measurement
W415		X
W416	X	X
W417	X	X
W418	X	X
W419	X	X
0155		X
0305	X	X
0306	X	X
0308		X
0313		X
0352	X	X
0410	X	X
P001		X
P003		X
P005		X
P006		X
P015	X	
P027	X	
P031	X	

VOC analysis using CLP SOW OLM 1.8

3.7.1.4 Head Measurements

Closely related to the operation of the system is the measurement of groundwater elevations in the OU-1 area, which are used to verify the satisfactory function of the pumping system. Head measurements will be made within the treatment area as specified in Section 8 of the *OU-1 Pump and Treatment Operation and Maintenance Plan* (DOE 2000b) and summarized in Table 3–1.

3.7.2 Phase I MNA Monitoring System

Monitored natural attenuation focuses on the groundwater and seeps in the OU-1 area of the Mound Site (Figure 3–1). Phase I consists of approximately 52 acres and lies on the southern border of the plant and is made up of three distinct sections of the site property. This area contains monitoring wells that are screened in both the Buried Valley aquifer and the bedrock aquifer system. There are currently (as of 2004) six groundwater monitoring wells and one seep (Figure 3–1) located within the boundary of Phase I that exceed the maximum contaminant level (MCL) for TCE, the only contaminant of concern.

A groundwater monitoring program has been established to ensure that the Buried Valley Aquifer is not negatively impacted by TCE contaminated groundwater within the Phase I bedrock aquifer system. DOE will continue to monitor groundwater in the Phase I area for TCE to verify that the concentration of TCE is stable or decreasing due to natural attenuation and is not impacting the Buried Valley Aquifer. The specifics of the monitoring are defined in Section 4.3 of the *Phase I Groundwater Monitoring Plan* (DOE 2003c). All groundwater monitoring information will be compiled in an annual report and will be provided to the regulators (see Section 3.4.6). When TCE concentrations in wells 0411 and 0433 and seep 0617 meet the MCL for 4 consecutive sampling events, the TCE monitoring may be decreased or discontinued upon concurrence with the USEPA and OEPA.

3.7.3 Site Monitoring Wells

During the routine site inspection, DOE will inspect all of the wells listed in Table 3–1 and Table 3–2 and arrange for needed maintenance or repairs (Figure 3–1). Monitoring personnel will also note maintenance needs and ensure the wells are kept secure and in good repair during routine sampling events. Monitoring personnel will maintain access to sample locations, and may include maintenance of access routes (i.e., gravel repair of paths and roads) and vegetation control around wells and access routes. Maintenance at off-site locations will be conducted in accordance with access agreements.

3.7.4 Seeps

During the routine site inspection, DOE will visit the seep listed in Table 3–2 and arrange for needed maintenance, such as access to the seep. Monitoring personnel will also note maintenance needs during routine sampling events. Access agreements for each of the off-site seeps will be reviewed annually to ensure that it is up to date.

Table 3–2. Groundwater Monitoring for Phase I

Monitoring Location	Area	Analyses
Well 0411	Well 0411 Area	Trichloroethylene (TCE) Dichloroethylene (DCE) Vinyl chloride (VC) Dissolved oxygen (DO) Temperature Eh pH
Well 0443		
Well 0353	Downgradient Bedrock Monitoring	
Well 0444		
Well 0445		
Seep 0617		
Well 0400	Downgradient Buried Valley Aquifer Monitoring	
Well 0402		
Well P033		

3.8 Five-Year Review

In addition to the annual review, 5-year reviews are performed at the Mound Site. Under CERCLA §121(c) - *Review*, USEPA is required to review the remedies at CERCLA sites where hazardous substances remain at levels that potentially pose an unacceptable risk. These reviews must be conducted every 5 years or may be conducted more frequently if necessary to ensure the protectiveness of the remedy. In general, if the selected remedy relies on restrictions of land, groundwater, or surface water use by humans or if any physical or engineered barrier is part of the remedy, then the use has been limited and a 5-year review should be conducted. At federal facilities such as the Mound Site, the Federal agency in charge of the facility (DOE) has the responsibility to conduct the 5-year review. USEPA should provide concurrence with the protectiveness determinations, or develop its own independent determinations.

DOE will prepare a CERCLA 5-Year Review Report in accordance with USEPA guidance (current at the time of report preparation) for 5-year reviews. The purpose of the CERCLA 5-year review is to ensure that the remedies remain protective of human health and the environment. The Mound Site 5-Year Review Report also will serve as the principle mechanism for monitoring, evaluating, improving, and reporting on all long-term management activities, including operations and maintenance; long-term monitoring; IC monitoring and enforcement; community involvement; information system; contingency actions; and post-ROD changes. The 5-Year Review Report will also include the results of the previous five annual inspections and environmental monitoring results. In the 5-Year Review Report, DOE will present an evaluation of remedy performance and recommendations for modifying the surveillance and maintenance program, implementing corrective action, or revision to the selected remedies (if necessary).

DOE will consult current USEPA guidance for 5-year reviews and will add essential elements to the inspection that precedes preparation of the 5-Year Review Report to ensure capture of necessary field observations. Additional evaluation of site monitoring data for the 5-year period will be conducted.

DOE will prepare a single 5-Year Review Report that addresses every removal and remedial action of the Mound Plant. The most recent 5-year review was competed in 2001. The next 5-Year Review Report will be released in 2006; therefore, the 2005 inspection will be structured to support the 5-year review.

3.9 Emergencies, Contingency Planning, and Corrective Action

Emergency measures are the actions DOE will take in response to unusual damage or disruption of the site that threatens or compromises the safety or security. Certain circumstances may arise during the surveillance and maintenance phase of the Mound Site that requires implementation of contingency actions. To the extent these actions can be anticipated and planned for, they have been incorporated into the specific O&M Plans and summarized in Appendix C. The table in Appendix C outlines possible incidents that may occur and the associated impacts and actions to be taken by DOE.

Site inspections, monitoring, and maintenance activities are designed to identify potential problems before they develop into a need for corrective action. However, in the unlikely case that extreme natural events, vandalism, or unanticipated events result in a need for corrective actions, DOE will notify USEPA, OEPA, and other affected parties as soon as an emergency situation is known to exist.

The public may use the 24-hour security telephone numbers monitored at the DOE office at Grand Junction (970-248-6070 or 877-695-5322).

3.10 Records and Data Management

The retention of records and dissemination of information over the long-term is a critical aspect of legacy management. Records that are needed for LTS&M purposes will be managed by OLM. Any centralized system to provide stakeholders and the public with access to records or copies of records will be managed by OLM.

Records and data required for LTS&M purposes have been divided into four categories:

1. Historical Data	• Real estate records • Property acquisition records • Cultural resource records • Photographs
2. CERCLA / Mound 2000 Process	• Removal Site Evaluation • Engineering Evaluation/Cost Analysis • Action Memorandum
3. Remediation Data	• Removal Action Work Plan • Removal Action • Design documents • Environmental monitoring data • Progress photographs
4. Post Closure Data	• On Scene Coordination Report • Residual Risk Evaluation • Environmental Summary • Records of Decision • IC Assessments • Monitoring data for OU-1 pump and treat remedy • Monitoring data for Phase I MNA remedy • As-built drawings for remaining facilities

3.10.1 LTS&M Records and Data Collection

Records related to LTS&M activities, including remedy performance and IC assessment will be readily available to stakeholders. Original records will be dispositioned in accordance with DOE requirements at the Federal Records Center (FRC) for their required retention period. Requests for LTS&M records can be made via the DOE contacts listed in Section 3.3.4. Also, document searches and requests can be made via the OLM website (http://wwww.lm.doe.gov).

All electronic data (i.e., environmental data and site boundary data) and information required to support LTS&M activities have been transferred to OLM. This data will be made available to the public through the Geospacial Environmental Mapping System (GEMS) computer system, currently used by OLM. Site mapping and environmental data (e.g., boundaries, structures, and wells) are viewable on the Internet at http://www.lm.doe.gov.

3.10.2 Pre-LTS&M Records and Data Collection

Copies of selected records documenting past remedial activities will be retained for legacy management purposes on or near the site by OLM. Records are selected because they contain critical information needed to ensure the continued management and the follow-on actions and controls (including property management) required to protect public health and the environment and to demonstrate compliance with applicable legal requirements. This surveillance and maintenance record collection does not include records that document past operations and remedial activities or information pertaining to employee or public health and safety issues with respect to former site operations. Document searches and requests can be made via the OLM website (http://wwww.lm.doe.gov).

Inactive or retired site records are stored at a Federal Records Center (FRC). The Regional Records Center designated archive facility for Miamisburg records created during the operation and remediation of the site is the federal records repository in Dayton Ohio. To facilitate retrieval of records after site operations cease, and because the greatest repository of site knowledge will reside with the site steward, OLM will obtain copies of box and file indices and Records Transmittal and Receipt forms (SF 135) for the site. These indices and SF 135s will be retained to access the surveillance and maintenance collection, and will remain in OLM custody.

In addition, DOE will have custody of site documents residing in the FRC and will be notified prior to the destruction of any temporary records. Original real property records will be dispositioned by EM to the FRC and custody will be transferred to OLM. Federal real property specialist may have access to these records.

3.10.3 Administrative Record and Information Repository Access

DOE is required to maintain a copy of the CERCLA Administrative Record pursuant to its Lead Agency status as authorized by Executive Order 12580, *Superfund Implementation*. The FFA and CERCLA regulations also state that DOE shall establish and maintain an administrative record at or near the site. DOE will provide access to a copy of the Administrative Record at the Public Reading Room (955 Mound Road in Miamisburg, OH) for a period of 2 years after closure of the Mound Site (DOE 2004). As required by the FFA, DOE will also make available the documents

in the CERCLA Information Repository for 10 years past termination of the FFA. These documents can requested through the FRC. The information repository consists of all documents that do not belong in the Administrative Record; however, they support documents contained in the Administrative Record. A listing of what documents are in the Information Repository is provided in Appendix A.

3.10.4 Regulatory Requirements

Project records are maintained in full compliance with DOE requirements:

- 36 CFR Parts 1220–1238 - National Archives and Records Administration,
- Title 44, United States Code, Chapter 29 - Records Management by the Archivist of the United States and by the Administrator of General Services,
- Title 44, United States Code, Chapter 31 - Records Management by Federal Agencies, and
- Title 44, United States Code, Chapter 33 - Disposal of Records.

The DOE Records Disposition Schedules provide the authority for the transfer, or disposal of records created and maintained by DOE. The Disposition Schedules, and the citations to the disposition authorities, can be found online at the DOE website under the Chief Information Officer (CIO) page (http://cio.doe.gov/Records).

3.11 Safety and Health

Health and safety procedures for OLM activities are consistent with DOE orders, regulations, applicable codes, and standards. The DOE-LM Integrated Safety Management process serves as the basis for the contractor's health and safety programs. All activities performed at the Mound site will comply with the DOE-LM contractor's *Health and Safety Plan*. Proper training (i.e., OSHA HAZWOPER) requirements will be met for the activities being performed. Mound contractors and subcontractors are required to review health and safety plans to ensure that they have an understanding of the potential hazards and the health and safety requirements associated with the work to be performed.

Specific safety guidelines for the operation of the OU-1 pump and treat system are contained in the *OU-1 Pump and Treat Operation and Maintenance Plan* (DOE 2000b). These guidelines outline the periodic review of safety procedures, maintenance of equipment, and proper handling of treatment chemicals.

3.12 Quality Assurance

All activities related to the surveillance and maintenance of the Mound Site will comply with DOE Order 414.1A, *Quality Assurance*, the DOE-LM contractor's *Quality Assurance Program Plan*, and ANSI/ASQE E4-1994, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*.

Quality assurance requirements and protocols for Mound Site monitoring operations and environmental monitoring are contained in the *Phase I Remedy Groundwater Monitoring Plan*

(DOE 2003c). This document outlines the analytical methods, field procedures, quality assurance / quality control, and data management and reporting requirements for the Mound Site. As additional QA/QC programs are developed, they will be reference in this section.

3.13 Budgeting and Funding

DOE will request adequate funds to maintain the remedies specified in the RODs for this site. DOE will provide appropriated funds to conduct long-term surveillance and maintenance at the Mound Closure Project as part of an annual Congressional appropriation. Approximate total funding to implement the LTS&M program described in this Plan is estimated to be $ 5,900,000 in 2007 dollars.

4.0 References

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Appendix A

Information Repository File Index

Information or plan to be provided

Appendix B

Community Involvement Plan

Information or plan to be provided

Appendix C

Emergency Response/Contingency Action Table

Table C−1. Emergency Response/Contingency Action

Incident	Impact	Action
Institutional Controls - Refer to *Operations and Maintenance Plan for the Implementation of Institutional Controls at the 1998 Mound Plant Property* for specific actions to be taken. Also, it is imperative to consult the individual parcel ROD to have a full understanding of all deed restrictions associated with a particular parcel.		
Site is used for land use that is not allowed under the ROD/quitclaim deed (i.e., residential, day care facility, school, community center, or playground).	Unacceptable exposure to residual radiological and chemical constituents in soil may occur to both adults and children.	DOE will discuss land use violation with property owner to rectify the violation. If it is determined that the owner has failed to comply with the deed restriction, DOE will refer the matter to DOJ for enforcement.
Site is used for farming.	Unacceptable exposure to residual radiological and chemical constituents in soil and groundwater may occur to both adults and children.	DOE will refer the matter to DOJ for enforcement.
Site is used for a land use that is not anticipated based on the industrial land use designation (i.e., health care facility, elder care, or restaurant).	Unacceptable exposure to residual radiological and chemical constituents in soil may occur to both adults and children.	DOE will discuss land use with the property owner. DOE will also consult with USEPA, OEPA, and ODH regarding the interpretation of the industrial land use designation which is mandated in the ROD. Actions will be taken than maintain the remedy effective in being protective of human health.
Definition of industrial land use changes in the future to include new scenarios that are not specifically excluded by the deed.	Unacceptable exposure to residual radiological and chemical constituents in soil may occur to both adults and children.	DOE will discuss land use with the property owner. DOE will also consult with USEPA, OEPA, and ODH regarding the interpretation of the industrial land use designation which is mandated in the ROD. Actions will be taken than maintain the remedy effective in being protective of human health.
The industrial pared does not succeed in developing the site.	The property may be developed for use that would result in unacceptable exposure to residual radiological and chemical constituents in soil.	DOE will discuss land use with the property owner. DOE will also consult with USEPA, OEPA, and ODH regarding the interpretation of the industrial land use designation which is mandated in the ROD. Actions will be taken than maintain the remedy effective in being protective of human health.
Movement of soil offsite without approval.	Soil may be used in areas that do not meet the industrial use scenario resulting in unacceptable exposure to residual radiological and chemical constituents in soil.	DOE will contact OEPA and ODH to determine if regulatory approval had been granted for the removal of soil. If prior approval had not been obtained, DOE will refer the matter to DOJ for enforcement.
Boundaries of the site are lost over time.	Encroaching non-industrial land use could result in unacceptable exposure to residual radiological and chemical constituents in soil.	DOE will discuss the possible land use violation with the land owner. Also, DOE will verify the site boundary to determine if a violation has actually occurred.
Use of the onsite groundwater for drinking water without approval.	Consumption of onsite groundwater could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will contact OEPA and ODH to determine if regulatory approval had been granted for groundwater use. If prior approval had not been obtained, DOE will refer the matter to DOJ for enforcement.

Table C−1 (continued). Emergency Response/Contingency Action

Incident	Impact	Action
Use of the onsite groundwater for industrial processes without approval.	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will contact OEPA and ODH to determine if regulatory approval had been granted for groundwater use. If prior approval had not been obtained, DOE will refer the matter to DOJ for enforcement.
Use of the onsite groundwater for irrigation on consumable crops without approval.	Uptake of radiological and chemical constituents in groundwater could result in unacceptable exposure.	DOE will contact OEPA and ODH to determine if regulatory approval had been granted for groundwater use. If prior approval had not been obtained, DOE will refer the matter to DOJ for enforcement.
Use of the onsite groundwater for firefighting, construction, or irrigation of non-edible plants without approval.	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will contact OEPA and ODH to determine if regulatory approval had been granted for groundwater use. If prior approval had not been obtained, DOE will refer the matter to DOJ for enforcement.
Children play in the seeps	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will discuss the possible land use violation with the land owner. DOE will also consult with USEPA, OEPA, and ODH regarding actions that may be taken that maintain the remedy effective in being protective of human health.
Seeps are used for drinking water	Consumption of onsite groundwater could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will discuss the possible land use violation with the land owner. DOE will also consult with USEPA, OEPA, and ODH regarding actions that may be taken that maintain the remedy effective in being protective of human health.
Worker who is less than 18 years of age is employed (full- or part-time) at the site.	Unacceptable exposure to residual radiological and chemical constituents in soil may occur.	DOE will discuss land use violation with property owner to rectify the violation. If it is determined that the owner has failed to comply with the deed restriction, DOE will refer the matter to DOJ for enforcement.
Miscellaneous Events		
Exposure of a construction worker or utility maintenance worker occurs due to presence of unknown contamination.	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	Cease excavation/construction activities. Contact 911 in order to isolate the area from people. Contact the DOE emergency contact number provided in Appendix __ of the LTS&M Plan.
The storm water retention pond is used for recreational purposes (i.e., fishing or swimming).	Exposure (dermal contact, inhalation, consumption, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	DOE will discuss land use violation with property owner to rectify the violation. If it is determined that the owner has failed to comply with the deed restriction, DOE will refer the matter to DOJ for enforcement.

Table C−1 (continued). Emergency Response/Contingency Action

Incident	Impact	Action
Precipitation event or flood results in movement of large quantities of soil from the site.	Soil may be transported offsite resulting in unacceptable exposure to residual radiological and chemical constituents in soil.	DOE will contact USEPA, OEPA, and ODH regarding the offsite transport of soils. DOE will estimate the quantity removed and its composition to determine whether an unacceptable exposure to residual radiological and chemical constituents in soil has occurred. Additional actions will be determined at that time, if warranted.
A buried drum (or other unknown material) is unearthed during soil excavation activities.	Exposure (dermal contact, inhalation, etc.) could result in unacceptable exposure to residual radiological and chemical constituents.	Cease excavation/construction activities. Contact 911 in order to isolate the area from people. Contact the DOE emergency contact number provided in Appendix __ of the LTS&M Plan.
OU-1 Pump and Treat Remedy – Refer to *OU-1 Pump and Treatment Operation and Maintenance Plan* for specific actions to be taken.		
Building power shuts off	The inward gradient is not maintained and may result in offsite migration of residual contaminants in the BVA.	Follow the Building Power and System Startup Procedures and Water Treatment System Measurements in the O&M Plan. Collect head measurements to evaluate inward gradient. If insufficient inward gradient, collect groundwater samples from wells along the compliance boundary to verify that levels have not increased.
Building temperature drops below freezing.	Pipes burst resulting in a disruption of groundwater extraction. This could result in the inward gradient no being maintained or surface release of extracted groundwater.	
Alarm sounds from building	System operation is disrupted.	
Influent line does not maintain sufficient flow.	Inadequate extraction volumes from the wells could result in the inward gradient not being maintained.	DOE will collect head measurements to evaluate inward gradient. If insufficient inward gradient, extraction well volumes will be increased to levels to maintain the required gradient. DOE will collect groundwater samples from wells along the compliance boundary to verify that levels have not increased.
Effluent monitoring indicates exceedence of NPDES discharge limit	Discharge of water with elevated level of a regulated constituent.	DOE will follow the reporting requirements in the NPDES permit. Also, DOE will evaluate reasons for increased levels in the effluent and the necessity for effluent treatment prior to discharge.

Table C−1 (continued). Emergency Response/Contingency Action

Incident	Impact	Action
Head measurements indicate that an insufficient inward gradient (<0.002 ft/ft) across the boundary.	Possible offsite migration of residual contaminants in the BVA.	If insufficient inward gradient, extraction well volumes will be increased to levels to maintain the required gradient. DOE will collect groundwater samples from wells along the compliance boundary to verify that levels have not increased.
Groundwater quality in downgradient wells exhibits increasing concentrations in TCE.	Possible offsite migration of residual contaminants in the BVA.	DOE will verify the elevated value by re-sampling and re-analysis of the well network. If the elevated values are verified, DOE will determine the necessity to increase area within the hydraulic boundary created by extraction of groundwater. DOE will also inform USEPA, OEPA, and ODH of the situation and the actions to be undertaken.
The groundwater monitoring does not indicate improved quality.	Extended monitoring of the site.	DOE will reevaluate the mechanisms that could be contributing to continued impact to the groundwater. DOE will also inform USEPA, OEPA, and ODH of the situation and the actions to be undertaken.
Phase I MNA Remedy – Refer to the *Phase I Remedy (Monitored Natural Attenuation) Groundwater Monitoring Plan* for specific actions to be taken.		
A threshold level is exceeded at a MNA monitoring location in the bedrock (monitoring well or seep).	Possible offsite migration of residual contaminants into the BVA.	DOE will verify the elevated value by re-sampling and re-analysis of the well network. DOE will also inform USEPA, OEPA, and ODH of the situation and the actions to be undertaken.
A threshold level is exceeded in a MNA monitoring location in the Buried Valley Aquifer.	Possible offsite migration of residual contaminants into the BVA.	DOE will verify the elevated value by re-sampling and re-analysis of the well network. DOE will also inform USEPA, OEPA, and ODH of the situation and the actions to be undertaken.
The groundwater monitoring does not indicate decreasing concentrations over time.	Attenuation of contaminants is not occurring and concentrations are not decreasing as expected. Possible unknown source to groundwater impact.	DOE will reevaluate the mechanisms that could be contributing to continued impact to the groundwater and recalculate the MNA timeframes based on field conditions. DOE will also inform USEPA, OEPA, and ODH of the situation and the actions to be undertaken.